

MEGALEASING
70 UPPER BISHOPS ROAD
LONDON, SW16
Burying - Selling - Leasing
A Computer - Call us
01-874 3241, TELEX 27199

NEWS IN BRIEF

Times talks hit snag

TALKS AT THE Times between management and some Natsops chapters have been held up by disagreement over the formula arranged by Employment Secretary Albert Booth (CW, March 15). Four Natsopa members who were sacked before their notice ran out and are not covered by the formula have been presenting a stumbling block.

RAC system

THE RAC has commissioned Systemolve, of Sunbury-on-Thames, to develop software for processing membership subscriptions. In addition to handling general administration, the new system will enable RAC patrolmen to verify over the phone that a motorist is a RAC member.

Conference

FRDM Facsimile to Electronic Mail is the title of ISL's conference next Tuesday and Wednesday at the Regent Centre Hotel, Curzon Street, London. Speakers will include Howard Anderson of the Yankee Group, Harry Belsey, of British Petroleum Communications Division, and Claire Messier from DEC in the US.

Glasgow office

A DOUBLING of Scottish business over the last year has led SIA to open a new sales and support office in Glasgow. SIA has had a node in Glasgow since 1976 but customers were previously supported from the Scottish headquarters office in Edinburgh.

Micro support

MICROPOWER is to get full marketing and distribution support from Ziling (UK) for the M2Z series microcomputers from the beginning of April.

COMPUTER WEEKLY

GEC director calls for changes in education system to cope with micros

A CALL for a major change in our educational system so that the country can benefit from the many advantages that microelectronics and the micro-processor offer, was made last week by Dr Robert Clayton, GEC technical director and chairman of GEC-Fairchild.



CLAYTON... "lack of innovation in the UK is a major concern."

The call was made during the Council of Engineering Institutions' Graham Clarke lecture, which Clayton was giving. Highlighting the fundamental differences between the UK and US in the development and exploitation of microelectronics, he said that this country had to learn how to produce people of

the calibre of Robert Noyce and Gordon Moore of Intel, Wilf Corrigan of Fairchild, and Pat Haggerty of Texas Instruments. "These people have a blend of various qualities", he said. "They all have scientific and research backgrounds, on to which has been overlaid entrepreneurial flair and management expertise."

"Can our education system do it?" he asked. He stressed that he felt the lack of innovation in the UK was a major concern, and that the education system should change to help rectify the situation. The US government acts as an

important customer to manufacturers, and Clayton feels that this should occur much more often in the UK. He regards it as a much better way of "funding" the development of an industry and its products than the direct financial support given by the UK government. "The cost of money is going up alarmingly", he said, "and implicit in the funding is a large amount of funding from the companies involved. For example, the £70 million for the microelectronics industry is planned to realise a total investment of over £200 million, with the rest coming from industry."

Shadow favourite in IBM user survey

FOLLOWING its acclamation by US users — who placed it joint first among IBM-compatible TP monitors in the Datapro 1978 Software Honour Roll (CW, January 4) — Altergo's Shadow II has again been rated top of the list by users, this time in a UK poll.

Conducted by the IBM Computer Users Association, the survey shows that two TP monitors — Shadow II and Thirst — are way ahead of the field in the eyes of users, who were asked to rate each package on a scale from 1 to 5.

Both Shadow and Thirst — the high-throughput system developed by Brown's Operating System Services — scored close to the maximum in user satisfaction at 4.8. Nearest competitor was Cincom's Enviro/1, at 4.0, with CICS rated at 3.8.

Vestinghouse's West, which came joint top with Shadow in the Datapro survey, was rated by only one CUA user; this means that no rating appears in the survey, which preserves confidentiality by printing scores only where more than five users responded.

The CUA survey, conducted last year, attracted responses from nearly all the association's 300+ GSD users. In addition to TP monitors, it covers 16 other categories of system software — in all, some 210 packages — and another seven categories of application software, comprising some 87 packages.

All installations completing the questionnaire are listed in full, together with their configuration, and are cross-referenced to the package ratings. This means that a potential package purchaser has access to a comprehensive user list, as well as an indication of average satisfaction with the software.

Where five or fewer users exist, the authors suggest contacting the installations directly

to obtain an opinion. In addition to being of real benefit to prospective purchasers, the survey — priced at £3 and available to CUA members only — makes revealing reading for anyone interested in 380/370 software.

In the area of information retrieval, for example, it shows that the Westinghouse package Quikjob is the most highly regarded, with a score of 4.8. Closest competitors are Pan-sophic's Eosyrtreave and Computer Associates' CA-Earl, each of which was rated at 4.2.

In common with the Datapro poll, some of the highest scores were achieved by relatively simple utility software, such as sorts. Two popular sorts, CA-Sort and Syncsort, were here placed equal at 4.8, though the survey shows that users of IBM's sort software still outnumber all others by about 24 to 1.

GSI UK has formally launched its in-house mainframe service (CW, March 8), under the name Local Computing Service. As expected it will be based on Digital Equipment 2070 machines and GSI has rewritten a lot of its existing financial and accounting packages to run on the 2070.

Where five or fewer users exist, the authors suggest contacting the installations directly

to obtain an opinion. In addition to being of real benefit to prospective purchasers, the survey — priced at £3 and available to CUA members only — makes revealing reading for anyone interested in 380/370 software.

In the area of information retrieval, for example, it shows that the Westinghouse package Quikjob is the most highly regarded, with a score of 4.8. Closest competitors are Pan-sophic's Eosyrtreave and Computer Associates' CA-Earl, each of which was rated at 4.2.

In common with the Datapro poll, some of the highest scores were achieved by relatively simple utility software, such as sorts. Two popular sorts, CA-Sort and Syncsort, were here placed equal at 4.8, though the survey shows that users of IBM's sort software still outnumber all others by about 24 to 1.

GSI UK has formally launched its in-house mainframe service (CW, March 8), under the name Local Computing Service. As expected it will be based on Digital Equipment 2070 machines and GSI has rewritten a lot of its existing financial and accounting packages to run on the 2070.

Where five or fewer users exist, the authors suggest contacting the installations directly

SAFE
COMPUTING LIMITED
The safe way to all your computing requirements



CLAYTON... "lack of innovation in the UK is a major concern."

The call was made during the Council of Engineering Institutions' Graham Clarke lecture, which Clayton was giving. Highlighting the fundamental differences between the UK and US in the development and exploitation of microelectronics, he said that this country had to learn how to produce people of

the calibre of Robert Noyce and Gordon Moore of Intel, Wilf Corrigan of Fairchild, and Pat Haggerty of Texas Instruments. "These people have a blend of various qualities", he said. "They all have scientific and research backgrounds, on to which has been overlaid entrepreneurial flair and management expertise."

"Can our education system do it?" he asked. He stressed that he felt the lack of innovation in the UK was a major concern, and that the education system should change to help rectify the situation. The US government acts as an

important customer to manufacturers, and Clayton feels that this should occur much more often in the UK. He regards it as a much better way of "funding" the development of an industry and its products than the direct financial support given by the UK government. "The cost of money is going up alarmingly", he said, "and implicit in the funding is a large amount of funding from the companies involved. For example, the £70 million for the microelectronics industry is planned to realise a total investment of over £200 million, with the rest coming from industry."

The call was made during the Council of Engineering Institutions' Graham Clarke lecture, which Clayton was giving. Highlighting the fundamental differences between the UK and US in the development and exploitation of microelectronics, he said that this country had to learn how to produce people of

"Can our education system do it?" he asked. He stressed that he felt the lack of innovation in the UK was a major concern, and that the education system should change to help rectify the situation. The US government acts as an

important customer to manufacturers, and Clayton feels that this should occur much more often in the UK. He regards it as a much better way of "funding" the development of an industry and its products than the direct financial support given by the UK government. "The cost of money is going up alarmingly", he said, "and implicit in the funding is a large amount of funding from the companies involved. For example, the £70 million for the microelectronics industry is planned to realise a total investment of over £200 million, with the rest coming from industry."

SAFE
COMPUTING LIMITED
The safe way to all your computing requirements

DES 'gets it right' on micros

THE Department of Education has "got it right" in its proposals on micro education (CW, March 15) according to Charles Sweeten, secretary of Micro-computer Users in Secondary Education.

But in expressing his association's approval of the DES' plans, Sweeten added, "It is very, very important that we get the next six months right." They should not sit back now and assume everything was all right, Sweeten warned. Several important areas were being held up at the moment, such as the needs of special education, handicapped and remedial, and exchange of information between schools, he said, adding that teachers' tasks were growing rapidly now that, without further resources, "soon we will not be able to cope."

The "most exciting" feature of the Department's plan was, in Sweeten's view, the idea of a advisory centre. "This could put everything together," he said.

GSI UK has formally launched its in-house mainframe service (CW, March 8), under the name Local Computing Service. As expected it will be based on Digital Equipment 2070 machines and GSI has rewritten a lot of its existing financial and accounting packages to run on the 2070.

Where five or fewer users exist, the authors suggest contacting the installations directly

to obtain an opinion. In addition to being of real benefit to prospective purchasers, the survey — priced at £3 and available to CUA members only — makes revealing reading for anyone interested in 380/370 software.

In the area of information retrieval, for example, it shows that the Westinghouse package Quikjob is the most highly regarded, with a score of 4.8. Closest competitors are Pan-sophic's Eosyrtreave and Computer Associates' CA-Earl, each of which was rated at 4.2.

In common with the Datapro poll, some of the highest scores were achieved by relatively simple utility software, such as sorts. Two popular sorts, CA-Sort and Syncsort, were here placed equal at 4.8, though the survey shows that users of IBM's sort software still outnumber all others by about 24 to 1.

GSI UK has formally launched its in-house mainframe service (CW, March 8), under the name Local Computing Service. As expected it will be based on Digital Equipment 2070 machines and GSI has rewritten a lot of its existing financial and accounting packages to run on the 2070.

Where five or fewer users exist, the authors suggest contacting the installations directly

SAFE
COMPUTING LIMITED
The safe way to all your computing requirements

DES 'gets it right' on micros

THE Department of Education has "got it right" in its proposals on micro education (CW, March 15) according to Charles Sweeten, secretary of Micro-computer Users in Secondary Education.

But in expressing his association's approval of the DES' plans, Sweeten added, "It is very, very important that we get the next six months right." They should not sit back now and assume everything was all right, Sweeten warned. Several important areas were being held up at the moment, such as the needs of special education, handicapped and remedial, and exchange of information between schools, he said, adding that teachers' tasks were growing rapidly now that, without further resources, "soon we will not be able to cope."

The "most exciting" feature of the Department's plan was, in Sweeten's view, the idea of a advisory centre. "This could put everything together," he said.

GSI UK has formally launched its in-house mainframe service (CW, March 8), under the name Local Computing Service. As expected it will be based on Digital Equipment 2070 machines and GSI has rewritten a lot of its existing financial and accounting packages to run on the 2070.

Where five or fewer users exist, the authors suggest contacting the installations directly

to obtain an opinion. In addition to being of real benefit to prospective purchasers, the survey — priced at £3 and available to CUA members only — makes revealing reading for anyone interested in 380/370 software.

In the area of information retrieval, for example, it shows that the Westinghouse package Quikjob is the most highly regarded, with a score of 4.8. Closest competitors are Pan-sophic's Eosyrtreave and Computer Associates' CA-Earl, each of which was rated at 4.2.

In common with the Datapro poll, some of the highest scores were achieved by relatively simple utility software, such as sorts. Two popular sorts, CA-Sort and Syncsort, were here placed equal at 4.8, though the survey shows that users of IBM's sort software still outnumber all others by about 24 to 1.

GSI UK has formally launched its in-house mainframe service (CW, March 8), under the name Local Computing Service. As expected it will be based on Digital Equipment 2070 machines and GSI has rewritten a lot of its existing financial and accounting packages to run on the 2070.

Where five or fewer users exist, the authors suggest contacting the installations directly

COMPUTER WEEKLY

Number 646 Thursday, March 29, 1979 Price 18p

Clash of the mainframers

ARCH enemies in the mainframe market, Gene Amdahl, founder of the Amdahl Corp., and Jacques Maisonneuve, chairman of IBM's World Trade Corp., crossed swords in public last week, after Amdahl had described IBM's marketing techniques as FUD — Fear, Uncertainty and Doubt.

The clash occurred at the London conference, Tomorrow in World Electronics, organised by the Financial Times (report, Page 11). Amdahl pulled no punches in his paper about the challenge to IBM from plug compatible CPU suppliers, such as his own company, and illustrated his point about FUD by asserting that IBM was

implementing some of its systems in microcode mainly to make IBM users believe that microcode would be used more and more in the future.

Amdahl said that microcode allowed down a machine and that it was only worth microcoding the most frequently used parts of systems software.

During question time at the end of Amdahl's paper, Maisonneuve stood up and said that Amdahl should know as an ex-IBM employee that IBM never used what Amdahl described as FUD, adding, "Let me know if you ever find any cases of FUD. Supply me with information."

Amdahl retorted, "We have been supplying that information to you regularly."

Implementing some of its systems in microcode mainly to make IBM users believe that microcode would be used more and more in the future.

Amdahl said that microcode allowed down a machine and that it was only worth microcoding the most frequently used parts of systems software.

During question time at the end of Amdahl's paper, Maisonneuve stood up and said that Amdahl should know as an ex-IBM employee that IBM never used what Amdahl described as FUD, adding, "Let me know if you ever find any cases of FUD. Supply me with information."

Amdahl retorted, "We have been supplying that information to you regularly."

Implementing some of its systems in microcode mainly to make IBM users believe that microcode would be used more and more in the future.

Program error shuts five nuclear stations

FIVE nuclear power stations in the US have been shut down because of an error in a computer-aided design program.

At fault are pipe supports in an auxiliary cooling system, whose strength has emerged as between one third and one sixth of that required by regulations. This design error has been directly attributed to a subroutine which subtracted horizontal stress figures from vertical ones instead of adding them.

Officials of the Nuclear Regulatory Commission, NRC, feared that the supports would not be able to withstand the shock of seismic disturbances.

Their decision to close down stations was disputed by the Boston-based construction firm which wrote and used the software.

While the company agreed with the NRC that the pipe supports were not as strong as initially conservative results at all times," it said that preliminary checks had shown that the systems would not fail under "postulated seismic events."

Amdahl executives, including the president of the company, John Lewis, have sold large amounts of stock that they held in the firm. The sales were all of unregistered stock that could be sold after being held for two years. John Lewis sold 31,900 of his 42,000 unregistered shares.

Amdahl executives, including the president of the company, John Lewis, have sold large amounts of stock that they held in the firm. The sales were all of unregistered stock that could be sold after being held for two years. John Lewis sold 31,900 of his 42,000 unregistered shares.

Amdahl executives, including the president of the company, John Lewis, have sold large amounts of stock that they held in the firm. The sales were all of unregistered stock that could be sold after being held for two years. John Lewis sold 31,900 of his 42,000 unregistered shares.

Amdahl executives, including the president of the company, John Lewis, have sold large amounts of stock that they held in the firm. The sales were all of unregistered stock that could be sold after being held for two years. John Lewis sold 31,900 of his 42,000 unregistered shares.

Amdahl executives, including the president of the company, John Lewis, have sold large amounts of stock that they held in the firm. The sales were all of unregistered stock that could be sold after being held for two years. John Lewis sold 31,900 of his 42,000 unregistered shares.

Amdahl executives, including the president of the company, John Lewis, have sold large amounts of stock that they held in the firm. The sales were all of unregistered stock that could be sold after being held for two years. John Lewis sold 31,900 of his 42,000 unregistered shares.

Systeme sets up factory in Bombay

THE first British computer company to establish a software factory in Bombay's Free Trade Zone is Systeme of Leeds. Starting with nine programmers, Systeme Computer Systems (India) was formed at the beginning of this month and is due to move into its permanent home in the Santa Cruz Electronics Export Processing Zone next week.

The company, which produces software packages and utilities for its UK parent, but has plans to provide software support and development for Systeme customers in the Middle and Far East.

A Systeme 5000, based on a Digital Equipment PDP-11/34, has been installed at Santa Cruz and the company is to seek software work from other PDP-11 users in Asia.

Systeme India, which plans to have a staff of about 100 in three years, chose its present site employees from 5,000 applicants, 300 of whom were experienced. The company is at present 88% UK owned, the remaining shares being held by executive director Ramesh Vorma.

Software opportunities in India — See page 40.

Systeme India, which plans to have a staff of about 100 in three years, chose its present site employees from 5,000 applicants, 300 of whom were experienced. The company is at present 88% UK owned, the remaining shares being held by executive director Ramesh Vorma.

Software opportunities in India — See page 40.

Systeme India, which plans to have a staff of about 100 in three years, chose its present site employees from 5,000 applicants, 300 of whom were experienced. The company is at present 88% UK owned, the remaining shares being held by executive director Ramesh Vorma.

Software opportunities in India — See page 40.

Systeme India, which plans to have a staff of about 100 in three years, chose its present site employees from 5,000 applicants, 300 of whom were experienced. The company is at present 88% UK owned, the remaining shares being held by executive director Ramesh Vorma.

Software opportunities in India — See page 40.

Systeme sets up factory in Bombay

THE first British computer company to establish a software factory in Bombay's Free Trade Zone is Systeme of Leeds. Starting with nine programmers, Systeme Computer Systems (India) was formed at the beginning of this month and is due to move into its permanent home in the Santa Cruz Electronics Export Processing Zone next week.

The company, which produces software packages and utilities for its UK parent, but has plans to provide software support and development for Systeme customers in the Middle and Far East.

A Systeme 5000, based on a Digital Equipment PDP-11/34, has been installed at Santa Cruz and the company is to seek software work from other PDP-11 users in Asia.

Systeme India, which plans to have a staff of about 100 in three years, chose its present site employees from 5,000 applicants, 300 of whom were experienced. The company is at present 88% UK owned, the remaining shares being held by executive director Ramesh Vorma.

Software opportunities in India — See page 40.

Systeme India, which plans to have a staff of about 100 in three years, chose its present site employees from 5,000 applicants, 300 of whom were experienced. The company is at present 88% UK owned, the remaining shares being held by executive director Ramesh Vorma.

Software opportunities in India — See page 40.

Systeme India, which plans to have a staff of about 100 in three years, chose its present site employees from 5,000 applicants, 300 of whom were experienced. The company is at present 88% UK owned, the remaining shares being held by executive director Ramesh Vorma.

Software opportunities in India — See page 40.

Systeme India, which plans to have a staff of about 100 in three years, chose its present site employees from 5,000 applicants, 300 of whom were experienced. The company is at present 88% UK owned, the remaining shares being held by executive director Ramesh Vorma.

Software opportunities in India — See page 40.

Systeme sets up factory in Bombay

THE first British computer company to establish a software factory in Bombay's Free Trade Zone is Systeme of Leeds. Starting with nine programmers, Systeme Computer Systems (India) was formed at the beginning of this month and is due to move into its permanent home in the Santa Cruz Electronics Export Processing Zone next week.

The company, which produces software packages and utilities for its UK parent, but has plans to provide software support and development for Systeme customers in the Middle and Far East.

A Systeme 5000, based on a Digital Equipment PDP-11/34, has been installed at Santa Cruz and the company is to seek software work from other PDP-11 users in Asia.

Systeme India, which plans to have a staff of about 100 in three years, chose its present site employees from 5,000 applicants, 300 of whom were experienced. The company is at present 88% UK owned, the remaining shares being held by executive director Ramesh Vorma.

Software opportunities in India — See page 40.

Systeme India, which plans to have a staff of about 100 in three years, chose its present site employees from 5,000 applicants, 300 of whom were experienced. The company is at present 88% UK owned, the remaining shares being held by executive director Ramesh Vorma.

Software opportunities in India — See page 40.

Systeme India, which plans to have a staff of about 100 in three years, chose its present site employees from 5,000 applicants, 300 of whom were experienced. The company is at present 88% UK owned, the remaining shares being held by executive director Ramesh Vorma.

Software opportunities in India — See page 40.

Systeme India, which plans to have a staff of about 100 in three years, chose its present site employees from 5,000 applicants, 300 of whom were experienced. The company is at present 88% UK owned, the remaining shares being held by executive director Ramesh Vorma.

Software opportunities in India — See page 40.

Systeme sets up factory in Bombay

THE first British computer company to establish a software factory in Bombay's Free Trade Zone is Systeme of Leeds. Starting with nine programmers, Systeme Computer Systems (India) was formed at the beginning of this month and is due to move into its permanent home in the Santa Cruz Electronics Export Processing Zone next week.

The company, which produces software packages and utilities for its UK parent, but has plans to provide software support and development for Systeme customers in the Middle and Far East.

A Systeme 5000, based on a Digital Equipment PDP-11/34, has been installed at Santa Cruz and the company is to seek software work from other PDP-11 users in Asia.

Systeme India, which plans to have a staff of about 100 in three years, chose its present site employees from 5,000 applicants, 300 of whom were experienced. The company is at present 88% UK owned, the remaining shares being held by executive director Ramesh Vorma.

Software opportunities in India — See page 40.

Systeme India, which plans to have a staff of about 100 in three years, chose its present site employees from 5,000 applicants, 300 of whom were experienced. The company is at present 88% UK owned, the remaining shares being held by executive director Ramesh Vorma.

Software opportunities in India — See page 40.

Systeme India, which plans to have a staff of about 100 in three years, chose its present site employees from 5,000 applicants, 300 of whom were experienced. The company is at present 88% UK owned, the remaining shares being held by executive director Ramesh Vorma.

Software opportunities in India — See page 40.

Systeme India, which plans to have a staff of about 100 in three years, chose its present site employees from 5,000 applicants, 300 of whom were experienced. The company is at present 88% UK owned, the remaining shares being held by executive director Ramesh Vorma.

Software opportunities in India — See page 40.

NEWBURY
Smart
Visual Display Terminals
PRICES FROM £495
Newbury Laboratories Ltd.
Hart Office & Sales
King Street, Odham
Hampshire RG25 1NN
Tel 025 671 2910
Telex 458R15

Number 646 Thursday, March 29, 1979 Price 18p

Program error shuts five nuclear stations

FIVE nuclear power stations in the US have been shut down because of an error in a computer-aided design program.

At fault are pipe supports in an auxiliary cooling system, whose strength has emerged as between one third and one sixth of that required by regulations. This design error has been directly attributed to a subroutine which subtracted horizontal stress figures from vertical ones instead of adding them.

Officials of the Nuclear Regulatory Commission, NRC, feared that the supports would not be able to withstand the shock of seismic disturbances.

Their decision to close down stations was disputed by the Boston-based construction firm which wrote and used the software.

While the company agreed with the NRC that the pipe supports were not as strong as initially conservative results at all times," it said that preliminary checks had shown that the systems would not fail under "postulated seismic events."

Amdahl executives, including the president of the company, John Lewis, have sold large amounts of stock that they held in the firm. The sales were all of unregistered stock that could be sold after being held for two years. John Lewis sold 31,900 of his 42,000 unregistered shares.

Amdahl executives, including the president of the company, John Lewis, have sold large amounts of stock that they held in the firm. The sales were all of unregistered stock that could be sold after being held for two years. John Lewis sold 31,900 of his 42,000 unregistered shares.

Amdahl executives, including the

COMPUTER WEEKLY

Vol. 26 No. 646
Thursday, March 29, 1979Editor
Gereth Jones 01-261 8033
Deputy Editor
Tony Higgins 01-261 8696
Advertisement Manager
Harry Hudson 01-261 8359
01-261 8503Class Ad Manager
Brien Durrant 01-261 8597
IPC Electrical Electronics Press Ltd.
Barnes House, Stamford Street,
London, SE1 8LU
Telephone: 01-261 8800
Telex: 911 518 PMS OBranch Office
Birmingham 202 London House, Walsall
Road, Birmingham B78 2JH
Telephone: 091 572 4211Manchester: South House, Talbot Road
Salford, Manchester M6 3Z
Telephone: 061 872 4211New York: 205 East 42nd Street, New York,
NY 10017
Tel: 212 867 2080 Telex: 421110

Published weekly on Thursday

Registered at the Post Office as a
newspaper. Price per copy 11p

IPC Business Press Ltd 1978

Members at Computer Weekly staff
may be contacted directly on the
advertising rates below. Other
departments in the Computer
Weekly office may be contacted by
dialling 01 261 8000.

EDITORIAL	
Kath Jones	261 8344
Tim Palmer	261 8031
Patricia Harris	261 8303
Sally Johnston	261 8028
Mervyn Williams	261 8008
David Allen	261 8170
David Bennett	261 8036
Mike Marples	261 8718
Dore Mitchell	261 8042
Chris Yount	261 8843
Nancy Pocke	261 8843
Judith Morris	261 8843

ADVERTISING	
Chris Prior	261 8658
Lloyd Collins	261 8743
Steve Bass	261 8283
Ian Darter	261 8106
Wendy Allen	081-872 4211
Harry Allen	081-872 4211
Birmingham	021-366 4838
Kent Parrott	021-366 4838

Classified	
Chris Prior	261 8028
Eddie Farrell	261 8097
Mark Williams	261 0018
John Farrer	261 8088
Ken Welford	261 8167
Namata Dibbs	261 8174

Manchester	
Owen Kelly	081-872 4211
Birmingham	
Paul McGowan	021-366 4838
Production	
David Abbey	261 8010
Peter Ragle	261 8818

Computer Weekly has a circulation each week of over 82,000 including the high- ly regarded circulation in the UK. The international edition, which is published 10 times a year has a circula- tion of over 84,000.
--

Computer Weekly is sent free of charge to the following categories in the UK and the only company directors, company secretaries, company executives, and all other responsible for computing, management, computer systems, business and industry, DP managers/supervisors, sys- tem analysts/DBA officers, programmers, operators, computer salesman, field engineers.
--

Controlled Circulation Department IPC Busi- ness Press (Printers & Distributors) Ltd, 48 Bentley Street, London EC1R 6NE, Tel: 01-427 3000. Subscriptions for readers outside the above categories for one year, UK £14.50, overseas £20. USA, Canada \$32, elsewhere £2.50. overseas £18. USA, Canada \$26, elsewhere £10 on request.

Subscriptions: IPC Business Press (Printers & Distributors) Ltd, 48 Bentley Street, Wapping, London, E1C 3AT, Tel: 01-427 3000.

Each number can be had as available for 4p post free.
--

ISSN 0010-478

GOVERNMENT COMPUTING
Ministry of Defence, Bath and Cheshire Hulme

On-line Optical Mark Readers with auto loads and stackers handling A4 size bar marked documents and producing ICL 1900/2900 compatible tapes (9 track PE 1800 bpi) required for installation between December 1979 and April 1980.

Applications for Operational Requirements, quoting CEH/80 should be made to:

Central Computer Agency Room 822, Riverbank House 187-181 Millbank London SW1 4RT
--

Proposals must be received by 30 April 1979.
--

COMPUTERVIEW

THE welcome resumption of
talks at The Times still has
hanging over it the shadow of
the apparently intractable dead-
lock between management and
the National Graphical Associa-
tion over direct input by jour-
nalists.

The NGA, understandably, is
still saying it is opposed to the
taking over by others of any of
its members' work. At the same
time, it is crystal clear to those
involved in the technology that
direct input will come sooner or
later, and as it has already done
in the US.

The fear has been that the
British Press will tear itself apart
in the battles over the change.

There are signs now, however,
that the NGA is beginning to see
the writing on the wall. While
not conceding anything, union
officials openly point to the
clause dealing with new technol-
ogy in the "Bnoth formula"
which the Employment Secre-
tary drew up. This states that
one of the matters for negotia-
tion will be "application of new
technology in accordance with a
timetable in be agreed and with
arrangements for future joint
reviews."

While this does not mention
direct input, it seems likely that
a formula will be reached similar
to that at Express Newspapers,
where the NGA is given juris-
diction over all keyboarding for
a fixed period of five years, after
which there will be a joint
review. Express management
was happy to concede this be-

cause direct input would be of
considerably less value there
than at The Times, owing to the
different styles of the papers.

An arrangement such as this
may seem to be putting off the
day of reckoning, but it is prob-
ably the only solution. It will
also allow the painful effects of
redundancies to be reduced, by
spreading them out over a
longer period.

There is, of course, no
guarantee that after five years
or so the union will agree to
direct input, but by that time the
writing on the wall will surely be
that much clearer.

On the other hand, there may
be more unemployment pro-
duced by other new technology,
prompting those with jobs to
cling on to them even harder. All
these things The Times
management must take into
account.

There are also signs that the
Fleet Street unions are becom-

Print union
sees writing
on the wall

cause direct input would be of
considerably less value there
than at The Times, owing to the
different styles of the papers.

An arrangement such as this
may seem to be putting off the
day of reckoning, but it is prob-
ably the only solution. It will
also allow the painful effects of
redundancies to be reduced, by
spreading them out over a
longer period.

There is, of course, no
guarantee that after five years
or so the union will agree to
direct input, but by that time the
writing on the wall will surely be
that much clearer.

On the other hand, there may
be more unemployment pro-
duced by other new technology,
prompting those with jobs to
cling on to them even harder. All
these things The Times
management must take into
account.

There are also signs that the
Fleet Street unions are becom-

FOCUS

A user's basic guide to
international conferences

NOT so long ago, it was the
accepted industry mode to
structure exhibitions with con-
ferences attached. No self-
respecting exhibition was com-
plete without an associated
seminar or full-scale conference.

As a means of attracting the
more serious-minded DP pro-
fessional to the event, the ploy
worked. The DP manager could
more easily justify his presence
— or perhaps absence from
work — in favour of an event
featuring a distinguished
gathering of speakers. Now it
seems, the conference takes
precedence over the exhibition.
Only truly major exhibitions
now escape incorporating a
panel of industry speakers.

For the visitor to such events,
problems abound. Should they
linger with the equipment and
revel with the sales teams, or
attend a stimulating talk on the
joys of text processing by an
eminent consultant from Lan-
gton Information?

Conferences, with or without
adjacent exhibitions, now come
international-sized. This month,
Infotech is staging an ambitious
program with the theme "The
European Computing Review".

Subjects under review are pre-
dictably erudite and include
such masterpieces as public key
cryptosystems, psychology,
ergonomics and the man/
computer interface, and the
challenge of the Third World.

Keeping to International af-
fairs, the Financial Times called
last week's conference "Tomor-
row in World Electronics". As to
be expected, there was a full
quota of global views, revolu-
tion, impacts and challenge in
the related themes. Whether,
however, IBM chairman of the
board, Jacques Maisonrouge, in
his "Computer and Society"
talk, welcomed the presence of
fellow speaker Gene Amdahl,
was not revealed.

Not to be outdone in the
status stakes, Online is holding
an international conference
next month on "New Concepts
in Business Information".

Just who attends these
conferences could well be a sub-
ject of more interest than the
actual proceedings. Few DP
managers have the time — or
funds — to attend. They are too
occupied coping with yester-
day's enigma today. Next week's
problems will have to wait their
turn. Similarly, the operations
team have their data hands full.

Only systems people and pro-
grammers have the opportunity

to indulge in time-out enter-
prises and have subsequent
scope to put ideas gathered at
the conference into practice. As
a direct consequence, installa-
tion personnel (except the ana-
lysts) will be too busy snorting
out the related mess to attend
conferences for several months.

Perhaps it is time a down-to-
earth conference was held with
the theme "The users' basic
guide to conferences". Evalua-
tion would be made between
competing events. Should the
DPM go for prestige sessions
held at The Inn On The Park or
settle for a practical meeting at
Enfield Drill Hall? Is it better to
aim for a back row seat with the
inevitable squeak from the
doors, or settle for a relaxing
spot adjacent to a radiator and
window? Does a pre-arranged
phone call during the session
enhance the individual's status?

The user conference could also
give some thought to the dis-
covery of a fresh batch of
speakers. Few conferences seem
complete without the profes-
sional presence of Ted Cluff
(IDPM), Gerry Fisher (BCS),
David Finkberg (NCC) or Dr
Adrian Stokes (Hatfield Poly).

Focus regrets, however, he is
not available for speaking roles.
He is too busy shouting at his DP
team and associated equipment.

1984 and all that . . .

THIS week's 24 prize for an example of the funny things people say
in the media about computers goes to Stephen Bell, formerly
Computer Weekly software editor, who now lives in Wellington and
edits New Zealand Data Processing.

Mathematicians and computer people prefer the acronym (12) system
because it has four units (1, 2, 2, 2) against the public system's three
(1, 2, 3). But there's no need to get technical.

the existing arrangements were
all agreed to by management,
but that was, of course, in the
days when newspapers were
owned by men who were more
interested in political power
than money, and would there-
fore agree to anything just to get
the next day's issue out.

The chairman of the last
Royal Commission on the Press,
Lord McGregor, warned
recently about the danger to
Press freedom from a state
takeover of The Times. He
pointed to the movements in
many other countries to estab-
lish a "new world information
order" by imposing government
control over the sources and
carriers of information. This was
justified as an attempt to pro-
mote "national identity", "cul-
tural integrity", and "political
cohesiveness", especially in de-
veloping countries.

An agreement at The Times
which will ensure both its
viability and its continued
editorial independence from
government, business, and
unions will constitute a welcome
bastion against these threats to
our freedom of thought.

DEC-Hoskyns deal

From Front Page

Initially restricted to the UK, it is
particularly significant that
DEC has chosen a partner with
strong US connections in the
form of Hoskyns' parent com-
pany, Martin Marietta.

Meanwhile, to mollify its
biggest OEM customer any-
where in the world, Gamma
Associates, DEC has signed an
agreement with Gamma award-
ing the Nottingham-based
group major account status.

Under the agreement DEC
will set up a major account team

Ten
years
ago...COMPUTER WEEKLY
MARCH 27, 1969

DELIVERIES of ICL 1900s
totalled 1,000 with the installation
of systems in the UK, France,
Spain and South Africa... The
first computerised hotel reser-
vation system in Europe was
scheduled for a July start... A
study on manpower and com-
puting, the first since 1964, was
initiated by the Department of
Employment and Productivity...
Some 800 non-industrial
poles had been moved in the
RAF, said the Minister of De-
fence for Equipment in Par-
liament, as a result of com-
puter control of equipment sup-
ply depots... The first com-
puter science course at Royal
University attracted 300 ap-
plicants for the 30 places...
IDC estimated the value of
1968 computer and peripheral
shipments worldwide from the
US at £7,200 million... IDC
formed a subsidiary, Data
Dataset, to handle supplies.

Inland Revenue's
online PAYE plans

ONE of the biggest computer
projects yet carried out in the
UK is now under way at the
Inland Revenue, which plans to
implement online systems in
implement online systems in
each of its 14 regions to take
over most of the PAYE work
currently processed manually.
ICL could receive substantial
mainframe orders, if a cen-
tralised approach is adopted and
government's single tender
policy still applies when con-
tracts are placed.

The Inland Revenue is pre-
siding ahead with the project de-
spite the forthcoming election,
and a Revenue spokesman told
Computer Weekly "We hope
that the system design will be
robust enough to cope in time
with a different structure of
personal tax. It will certainly be
far more flexible than the batch
systems proposed in the original
PAYE scheme."

The only one of the nine batch
systems to go live was at East
Kilbride in Scotland, and this
centre now handles in batch
mode the same sort of jobs that
will be processed online by the
proposed systems. The jobs in-
clude PAYE assessment, coding,
adjustment and repayments.

At the end of next month the
Inland Revenue hopes to submit
a model system report to the
Central Computer Agency de-
tailing the data processing
requirements for the proposed
systems and listing the various
options for handling them.

One of the most crucial issues
to be resolved is whether a cen-
tralised mainframe approach
should be adopted, or whether
each tax office should be equip-
ped with its own small system.

The Inland Revenue spokes-
man pointed out that the ren-

Topexpress to market Tripos
portable operating system

TRIPOS, the portable operating
system developed at Cambridge
University (CW, March 15) is
also to be marketed by Topex-
press, a Cambridge-based sci-
entific and computer consultancy.
Topexpress sees the software as
well suited to single computer
systems in addition to ring net-
works and will be installing its
Tripos system in May for an
unnamed user.

According to technical direc-
tor Jack Lang, a particular
strength of Tripos is its capacity
for switching packets rapidly
between small processes,
making it ideal for transaction
processing and real time
monitoring applications.

The firm will also supply data
link hardware, but sees the cur-
rent cost of the ports — around
£1,000 — as a stumbling block.
This obstacle should be removed
next year with the availability of
custom-built chip sets, possibly

for as little as £50.
No copyright attaches either
to Tripos or to BCPL itself, both
of which can be obtained
directly from the Cambridge
computing laboratory at
relatively low cost (Software
File, March 15). Because of this,
companies marketing the soft-
ware are basically selling expert-
ise and support, the only pro-
prietary content being such
things as compilers and
operating system extensions.

ICL picks B7800s

WHAT is claimed to be one of
the largest real time commercial
networks in the UK, run by
ICL's Pharmaceutical Division,
is to be based on a dual Bur-
roughs B7800. This £2.4 million
order is the first in the UK for
the biggest of the 800 series, and
includes twin B7805 processors
sharing 4.7 Mbytes of memory.

RAF INSTITUTE OF AVIATION
MEDICINE
FARNBOROUGH, HANTS

A mini/micro computer based system is required for on-line ax-
onometer control, data acquisition and storage. The system will
communicate directly with the laboratory's central computer facility to
allow transfer of experimental data for further processing.
Applications for the operational requirement quoting CEH/81 should
be made to:

Central Computer Agency
Room 922, Riverbank House
Millbank, LONDON SW1 4RT
Proposals must be received by 30 April 1979.

ACOUSTIC
COUPLERS

Microprocessor
CONSULTANTS

System development
Consultancy
8 Lonsdale Road
MILNERS, DORKING, SURREY

Sanctions busting charges dropped

CHARGES of Rhodesian sanction
busting, made earlier this year
against Computer Resale
Brokers, have been completely
withdrawn by the Customs.
Similar charges against Barry
Cross of CRB, and a former
director of the company, Chnd-
wick Stolper, have also been
dropped.

The charges alleged that be-
tween August, 1976, and Oc-
tomer, 1974, CRB supplied
equipment to Rhodesia through
intermediate firms in Europe.
Cross told Computer Weekly,
"The Customs had a query on our
volume of exports. It could hap-
pen to any company."

Following a preliminary
hearing early this month the case
was put over to April 30 at West
London Magistrates Court, but all
charges were dropped at a
hearing on March 13.

Campus networks urged as way of
unifying university computing

DEVELOPMENT of campus
networks — networks within
universities — should be encour-
aged as "an important unifying
element in university com-
puting" and should be funded by
the Computer Board. That is one
of the recommendations made in
a summary of the activities of
the Network Unit in the first
issue of the IUCC Bulletin.

In order to standardise these
campus networks, both inter-
nally and in their links to other
computer systems via, for in-
stance, the Post Office PSS, cen-
tral co-ordination should be set
up, said Mervyn Williams, head

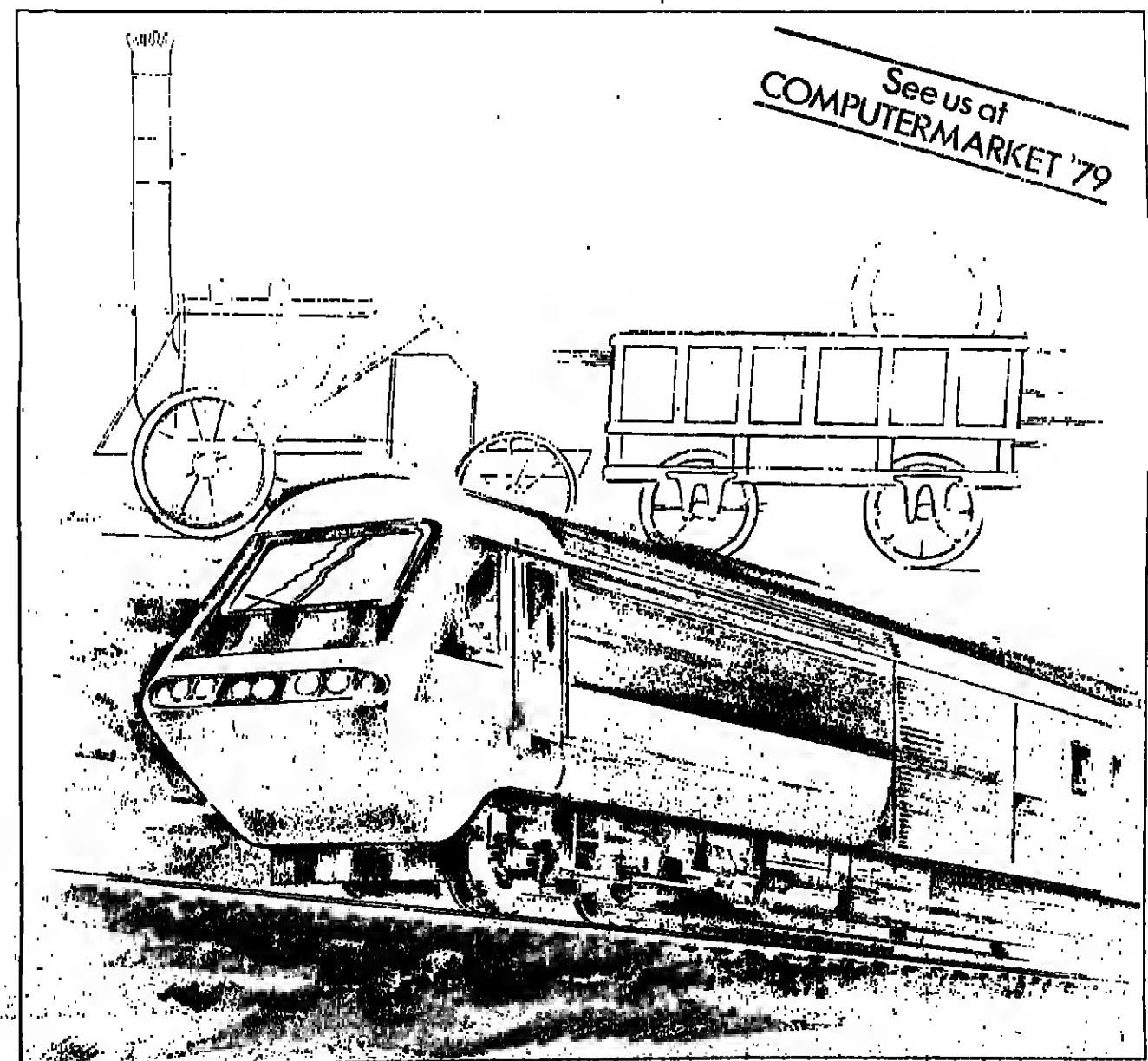
of the recently wound-up unit.
He lists a range of other con-
clusions that have come from
the unit's two years of study, to
do with standards, how the
sharing of resources on inter-
university networks should be
managed, and how planning and
costing should be organised.

A distinguished collection of
authors have contributed to this
first issue of the Bulletin, which
the Inter-University Committee
on Computing aims to publish
three times a year. Phillip
Williams of UMIST, examines
the potential of the Distributed
Array Processor for information

retrieval, and Mike Pittaway of
Brunel reviews a symposium on
"Mathematical methods in com-
puting graphics and design."

Williams concludes that the
DAP is not really suitable for
information retrieval because
what is needed is not high-speed
processing but high-speed
input/output.

The IUCC Bulletin is edited
at the University of Manchester
Computer Centre. Subscriptions
cost £10 a year, from Miss M. J.
Day at the Computer
Laboratory, Corn Exchange
Street, Cambridge.



Success breeds success

Success is hard to define. In our case it means that
we have more than doubled our turnover within
the past year, that we have doubled our product
range recently, and we now have the first of our
new factories up and running.

We're proud to be British and privately-owned.
We've a long history in computing and we
value our customers. A long future, too. Our user
groups like a directory of all that's best in high
technological achievement at home and overseas.

Of course, you don't have to be as big as Her
Majesty's Government, the Post Office, British
Rail, British Steel, the CEB or the Science
Research Council to enjoy the benefits of a GEC
4000 machine. What we can do for them, we can
probably do for you.

Call us and see. Our UK Sales Manager is on
01-953 2030 ext. 3799 and our Export Manager
is ext. 3478.

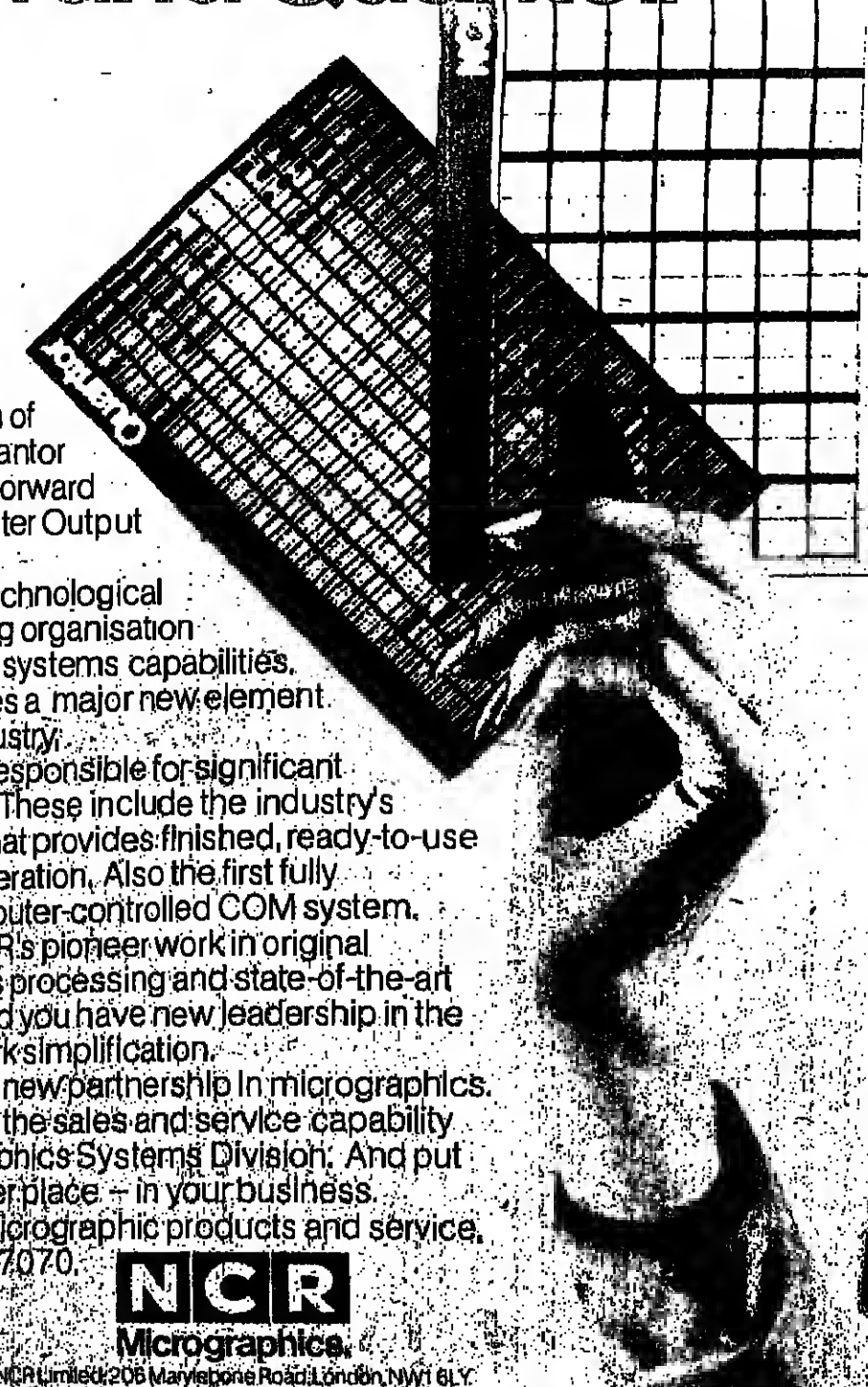
GEC

GEC Computers Limited
Elmer Way, Borehamwood, Herts. WD6 1RX
Telephone: 01-953 2030 Telex: 22717
Teletype: 22717 The GEC Group Company Limited of England

See us at
COMPUTERMARKET '79

£10,000 grant for industrial robot research

● Data General



NEWBURY

SMART
MICRO-BASED
VISUAL DISPLAY
TERMINALS

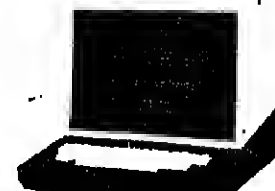
Model 700B-700S

- * British design and manufacture
- * Based on 8080A Microprocessor
- * Two-page Memory 3,840 characters
- * 24 Displayed lines of 80 characters per line
- * Switchable Transmission Speeds from 50 Baud to 19,200 Baud
- * Split Speed Transmission Mode
- * Dual Interface - CCITT V24 and 20/80 mA Current Loop
- * Hard Copy Printer Output
- * Priced Field Format - Blink Background or Half Brightness
- * XY Cursor Address (send and receive)
- * Roll or Page Mode
- * Video Output for External Monitor
- * Full Character Editing Features
- * Block Transmission from Screen by Line or Page
- * Green Phosphor Non-glare screen



Models 7001-7002

- * 24 Lines of 80 characters per line
- * Selectable Baud Rates from 50 to 19,200 Baud
- * Dual Interface - CCITT V24 and 20/80 mA Current Loop
- * Teletype Compatible
- * Hard Copy Printer Output
- * Selectable Half or Full Duplex
- * Video Output for External Monitor
- * Green Phosphor Non-glare screen



Model 7000

- * Teletype Compatible
- * 24 Lines of 80 Characters per line
- * Selectable Baud Rates from 50 to 19,200 Baud
- * CCITT V24 Interface
- * Selectable Half or Full Duplex
- * Green Phosphor Non-glare screen

PRICES FROM £495

NEWBURY
LABORATORIES LTD
HEAD OFFICE & SALES
KING STREET ODHAM
HAMPSHIRE RG25 1NN
TEL: 025-671 2910
TELEX: 858815

Manufacture:
Annis Road, Newbury, Berkshire
RG14 5BU
Tel: 0635 48804
Service Centre:
Rens Lane, Newbury, Berkshire
RG14 5BH
Tel: 0635 48888
Northern Area Sales & Service:
2 Dalby Road, Chislehurst, Essex
SS80 1PL
Tel: 061-491 0134

GILB'S MYTHODOLOGY

Can you measure the
quality of your database?

CAN you give me a number, currently measured, which expresses the degree to which I can trust the data in your database or file?

When you started your database project, did you specify the level of confidence others should be able to have in the correctness of data in the database? Did you do so quantitatively? Did you specify a practical measuring method so that you could prove that your project had met its database reliability goals?

If so, you are one of the few people or organisations in the world that has, and you should write down your experiences for us fellow professionals to share.

I marvel at the audacity of it. We just take a chance on the quality of one of our most critical resources. We certainly don't check the quality of the input or the programs that can produce incorrect data in our

database. The application programs which handle the database records rarely do more than surface checks on the quality. The complexity and quantity of data in the database forbid any human checking effort.

A lot of professionals will not immediately agree with my assertions about the lack of control, which is precisely the problem. We think we have adequate controls, and we have no adequate measuring tools to tell us that we are wrong!

I asked about 40 database specialists in London how many of them used anything resembling a database audit (check, diagnosis, call it any of these) program to subject their databases to a thorough check and measure of reliability. Only two claimed they did, and one of those changed his mind when he understood the question.

In August 1977 I visited Bell Labs and met a group who take their database quality control seriously. They are responsible for some very large databases. One of them, Jim Grimes, has published a report (EDPACS Journal, Feb 1977) on Bell's use of database audit programs.

Bell uses an auditor sampling technique which gives an interesting quantitative measure of the quality of the database data. One must keep in mind that the Bell database audit programs are extremely deep in their checking. It takes IBM 370/158s, using IMS, about two hours to audit five hundred to a thousand records.

The Bell technique samples at random. If the sample contains NO ERRORS after sampling a thousand records, then it can be asserted with 99% confidence that the reliability is equal to greater than 99.5% (Reliability in the area that the audit program covers).

Grimes shows a table:

Number of Random Records Selected	Maximum Error Rate (99% Conf.)
100	4.5
500	0.9
1,000	0.5
2,000	0.2
5,000	0.1

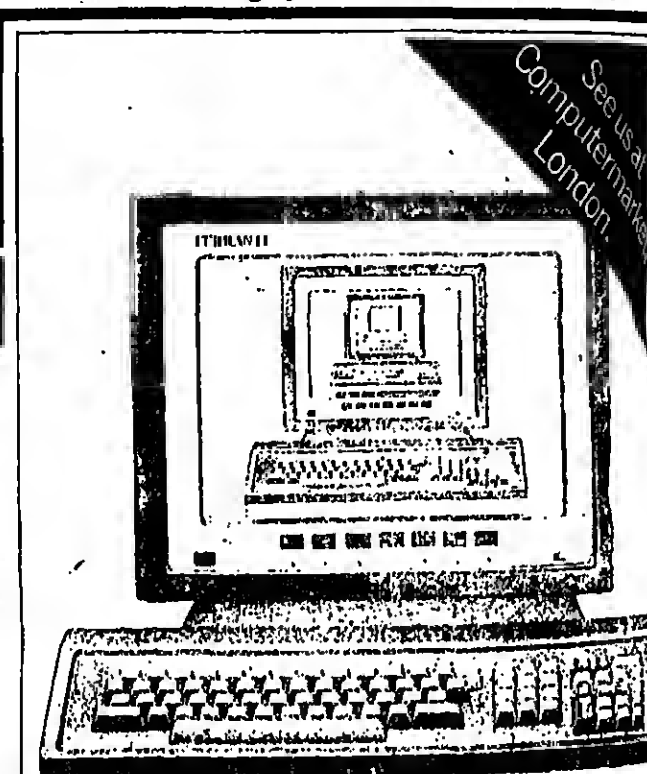
In a sense, this is no more than automated auditing.

But in my mind it represents a conceptual breakthrough of interest to all database designers and database administrators. It gives us a specific tool for measuring the quality of the diverse efforts intended to maintain the integrity of our

databases. We can monitor only our own application programs, but failures in database software (which Bell reported detecting with its audit program) and in hardware.

In setting our project goals we can select a minimum level of database reliability, and assign into the project an audit program and procedures for practical measurement of the achievement of that goal.

I have already begun to practise this in my own design practice, and as far as I can judge it would be a step forward for us all to do so.



PT7. Look closer.

PT7 intelligent terminal is more than just a viable alternative to the ICL 7502 or IBM 3270. The closer you look the better it looks. Get the facts.

Call 061-437 5391 or write: Ferranti Computer Systems Limited, Wytham Shaw, Manchester M22 5LA

FERRANTI
Computer Systems

TIS conference

CINCOM'S UK and European customers will have their first opportunity to evaluate TIS (CW, October 12, 1978) at the firm's eighth international user conference to be held at the London Heathrow Hotel on April 23-24.

PROGRAMMER NOTES

Learning patience, humility,
and who's boss from VME/B

ICL's top-end operating system for the 2900 range, VME/B, has been much criticised for lacking critical facilities, such as a file-store equivalent, and for its error-prone telecommunications package, Kommy.

Such design omissions and weaknesses have been a major source of irritation to users, and in the case of Kommy have obliged ICL to rewrite the package, a task that is still in process. While it is likely that many of the deficiencies will be corrected in future releases, it could still be some time before all the problems are ironed out. Meanwhile users continue to struggle in certain areas.

Some of these areas have now been highlighted in satirical vein by Professor David Barron, of Southampton University in his capacity as a user of the university's 2970.

Under the title *Helpful Hints for VME/B Users*, Barron identifies the following curious pieces of system behaviour:

1) "If your program suffers a

stack overflow, the program listing and the spooled output from your program are thrown away. This feature is intended to assist program debugging, which is so much easier if you do not know what the program was, nor how far it got before the trouble occurred.

2) "If your MAC terminal does not respond to Control-A, and you sit there impatiently pressing the key (as one might lean on an unresponsive doorbell), you will screw up the terminal, and on a good day you may crash the entire system."

"This feature is intended to teach you the virtues of patience and humility, and to show you who's boss."

3) "If you have written a text-processing package, and use it at a MAC terminal to produce a camera-ready copy suitable for an offset-litho printing machine, your carefully arranged layout will be ruined by periodic appearances of the mystic incantation **BREAK IN ACCEPTED**."

Puzzler

8	2	3	1	9	2	5	4	2	7	3	2
4	7	9	4	1	9	4	7	8	4	4	7
8	3	3	5	8	4	4	6	1	5	9	3
3	7	5	3	7	3	7	4	7	4	8	3
6	6	4	9	1	5	3	8	5	2	2	6
1	5	3	1	8	5	9	3	4	6	2	8
9	1	7	7	2	6	2	7	3	8	1	7
9	1	6	2	4	4	8	6	9	2	8	1
3	5	2	8	9	3	3	1	2	7	2	5
6	7	4	6	1	1	6	9	4	2	6	9
3	8	1	3	6	8	1	7	2	8	5	4
5	3	9	6	1	8	2	5	1	7	2	8
7	3	6	4	5	2	7	2	9	2	5	2
9	5	2	8	9	5	1	6	8	1	6	8

THIS week's problem is to start at the 8 in the top left-hand corner, and then trace a continuous non-intersecting route through another 39 numbers to achieve the maximum possible 40-square combined total of 282. Each move through the matrix must be made horizontally or vertically or diagonally. See page 38 for solution.

Datasolve
APL
-a complete service

Datasolve APL is a service which gives you all the power of an interactive programming language plus the benefits of fast response, rapid program development and immediate results.

What you get is a service which is easy to learn, easy to use and provides a full range of utilities and packages such as our Financial Planning System (FPS), Simulation, Network Analysis.

For more information contact:
APL Unit
BOC Datasolve Limited,
Datanet House,
29 Church Street, Staines,
Middlesex TW20 4XS,
or Inception Staines 61664

Graph Plotting and Statistics for example, is a compatible, fully supported and available package. Datasolve's APL service has a background network using both high and low speed lines. We also provide complete APL training.

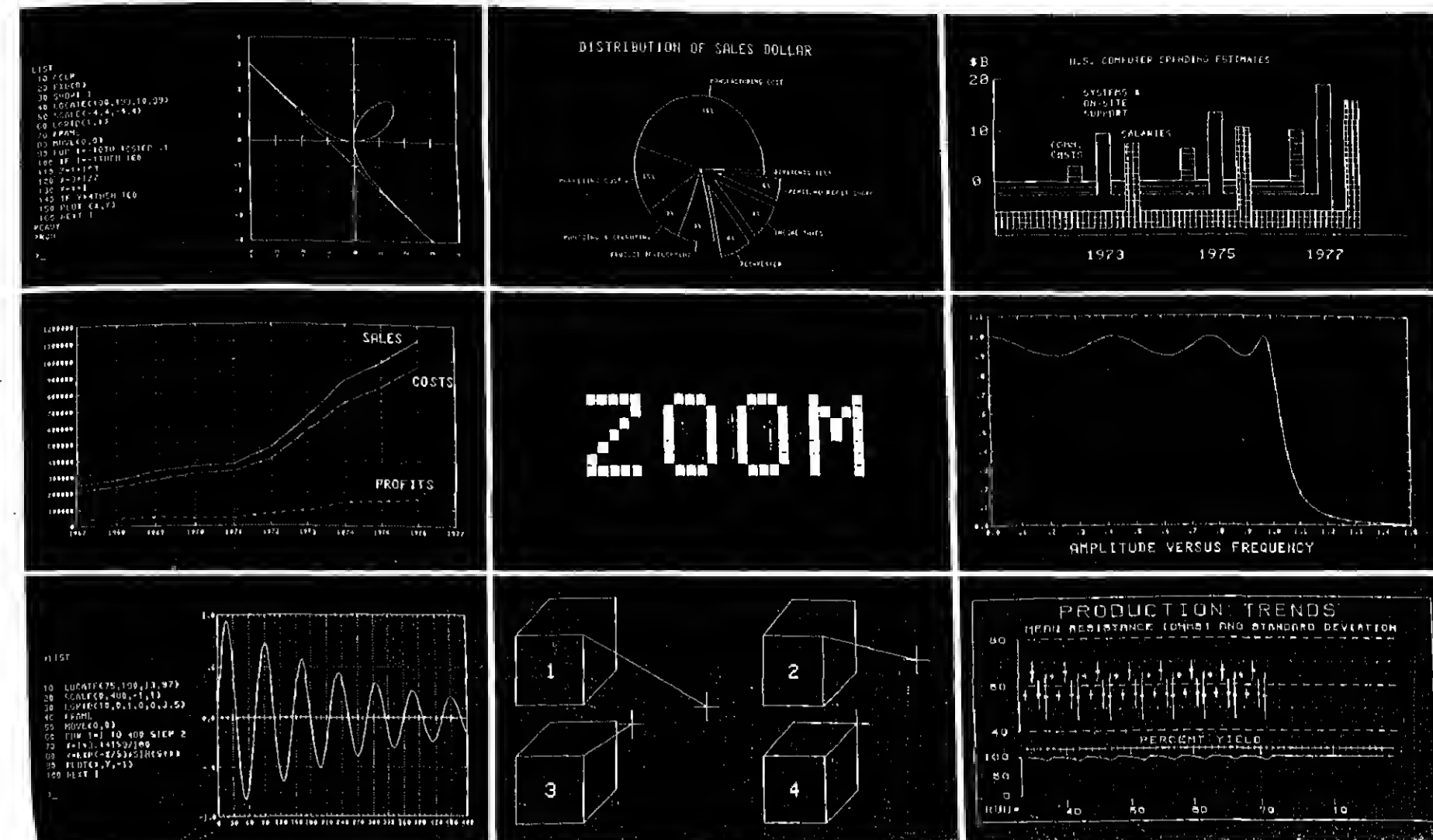
Please send me more information about:

☐ Financial Planning (FPS)
☐ Simulation
☐ Network Analysis
☐ APL Training

Name _____
Company _____
Address _____
City _____
Postcode _____

BOC Datasolve

Graphics.



Without graphics software.

You just lost your last excuse for only using alphanumerics. Because with HP's new 2647A intelligent graphics terminal, you get graphics without digging into your CPU's software. A picture's worth a thousand numbers.

On an alphanumeric terminal, your data's just a screen full of numbers. But with the 2647A you can plot tabular data as a bar graph, or a pie chart, or a linear or logarithmic line graph. Quickly, with just a few keystrokes.

What's more, with the 2647A you can zoom in and out and pan right, left, up or down.

Selectively erasing, shading important areas to make them stand out or using a rubber-band line to make a quick sketch can all be done without any help from your programming department.

It's more than smart. What if your CPU's output isn't tabular? Or if you'd like to plot derived data, say a three-month moving average from monthly sales figures? Or if you need more than a bar graph, pie chart or line graph?

The 2647A's not just smart, it's intelligent. You can program it to reformat data from your CPU, or to compute more data, in easy-to-write BASIC and you can program it in APL, our high-level graphics language extension of BASIC. Its powerful commands, such as FRAME, AXES, LABEL, LOCATE and PLOT put sophisticated graphics at your fingertips. Hard copies easy.

The 2647A makes graphics as portable as alphanumerics. It interfaces easily with our

9872A four-colour plotter and with our 7245A thermal plotter-printer.

And to keep costs down, more than one 2647A can share the same hard copy peripheral. You still get alphanumerics.

The 2647A's also a programmable alphanumeric terminal for interactive use on-line or by itself with independent alphanumeric and

graphics memories.

It also features a bright, easy to use, high resolution display and a built-in dual cartridge tape drives for 220K bytes of mass storage. And with eight soft keys you can define to do several steps with a single keystroke.

So you don't have to give up alphanumerics to get graphics.

HEWLETT hp PACKARD

Winnersh, Wokingham, Berks. RG11 5AR. Tel: Wokingham 784774.

To: Hewlett-Packard Ltd., King Street Lane, Winnersh, Wokingham, Berks. RG11 5AR.

☐ Send me more information about graphics without graphics software.

☐ I would like a demonstration please. Phone me/my secretary for an appointment.

Name _____

Title _____

Company _____

Address _____

Postcode _____

Tel. _____

Ext. _____

APL Unit

MICRO NEWS

'CMOS-SOS the technology of future'—Univac

WHILE the number of general semiconductor manufacturers has dropped by 10% between 1975 and 1978, the number of systems manufacturers that have added internal R&D and production facilities for semiconductor manufacture has doubled.

In this exclusive interview with Micro News editor Martin Banks, Dr Barry Borgerson, director of research and technical planning for Univac in Blue Bell, Pennsylvania, discusses the reasons for this and the technologies and products it is taking them towards.



Borgerson... "We can manufacture the semiconductors at a loss and still come out ahead at systems level."

"VERTICAL integration has become a necessity for systems manufacturers," said Dr Barry Borgerson, director of research and technical planning with Univac. "Computer manufacturers don't get the attention from the mainstream semiconductor companies now, because the volume of parts we order is too low."

We were discussing the keynote speech by Dr Gordon Moore, president of Intel, at the International Solid State Circuits Conference in Philadelphia, in which he suggested that the level of integration now possible in microelectronics made definition of a potential product extremely difficult for the semiconductor industry, and that the systems houses would take more and more of this effort on themselves (CW, February 22).

Borgerson firmly backed Moore's views on how the development of microelectronics technology could now start working against the semiconductor industry, in terms of the ability to make advanced products economically.

He agreed that for a company like Univac, the actual cost of design and production of semiconductor devices was more than balanced by the added value they gave to a system. "We can manufacture the semiconductors at a loss," he pointed out, "and still come out ahead at the system level."

As a major part of his function at Univac is to marry the demands of a big systems house to the capabilities of the semiconductor business, he has a growing responsibility for a wide range of research and development in the field, "even

though we use such devices as the Intel 8080 and AMD 2900 when and where we can".

This R&D effort is not only centred around applications-oriented circuit design, but also around circuit processing technologies and fundamental circuit design approaches.

To some extent, this has been forced upon the company by the general semiconductor industry and its increasing lack of interest in the sales volumes of the computer business.

Therefore Univac now has production capability in NMOS and ECL technologies, plus R&D in CMOS-SOS, gallium arsenide, and aluminium-based Josephson Junctions.

While the current favourite technology at Univac is NMOS, Dr Borgerson feels that the future will largely lie with CMOS-SOS. This is a technology that has been plagued by problems in bringing it from the laboratory to the production stage, but these are now being overcome.

One problem undoubtedly not unique to Borgerson, in his position as director of research, is attempting to predict the future prospects of both existing technologies and those coming up on the horizon.

For example, Univac is already looking into the potential of gallium arsenide as a long term replacement for the many silicon-based technologies.

Borgerson feels that gallium arsenide might well be ready in the 1980s, as the technology is currently looking good. It is however being pushed hard by the Josephson Junction technology, and it is possible that a similar approach of cooling the devices, essential to the operation of Josephson Junctions, may be used to get gallium arsenide circuits switching even faster the gigahertz frequencies that are already possible.

Cooling these devices to temperatures that approach absolute zero obviously poses considerable ancillary problems to the systems designer, and for this reason Dr Borgerson sees only a limited future for it.

Dr Borgerson felt that all the research into semiconductors was not going to lead to radical developments at the systems level, especially where computer architectures were concerned.

He indicated that the only areas where new architectures might be seen in the future are in special purpose applications, such as single language processors. At present however, these are not a cost-effective proposition.

The areas that Univac is looking at particularly are data-base and scientific systems. These are areas where the natural language interface to data-base systems that has been an earlier this year (CW, January 4) could have significant impact. Research on this is being pursued at two fronts: one the

software system itself, and the second the possibility of voice input being exploited. Both routes are in the research stage at present, but Borgerson believes that Univac now understands enough about the problems to get a viable product on the market within about three to five years.

The first product using natural language input will almost certainly be a keyboard-based terminal, but Dr Borgerson estimated that a voice input version will follow about two years later.

The market that Univac is already cycling for this system is that of the automated office.

Tailoring possible on the repackaged version of Apple II

A RE-PACKAGED version of the Apple II computer has been produced by a West German firm, which is aiming the system strongly towards the business market.

The firm, Rainer M. Stecher Computer Technik of Kirchheim-Teck, has taken the basic Apple II board, and put it in an enclosure that houses a 12 inch screen, and Apple's ROM-mounted floating point Basic. It has given the name Cab 66 to the "new" system.

Its minimum configuration is 20K bytes of RAM, while the maximum is the standard Apple 48K bytes. It comes with a wide range of peripheral options, in-

cluding floppy disc drive, printer, digitiser and a modem. The company is also willing to tailor the system, both in hardware and software, to specific requirements.

Prices quoted for a 20K system in West Germany are 4,685, appear to make the competitive with standard Apple systems. This works at about £1,050. A 48K system is the equivalent of £1,270.

According to the company the "bad news" is that delivery about six weeks, due to European demand. However, does offer a sweetening in count for payment in advance.

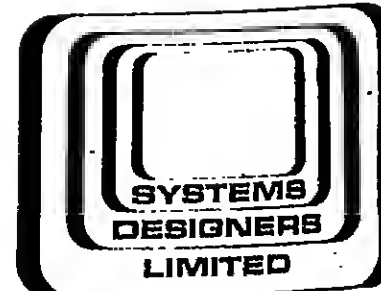
Byte Shop deal to sell OEM video terminals over counter

AMONG the new equipment that will be seen at the most recent Byte Shop to open — in London's Tottenham Court Road — is the range of Volker Craig VC400 terminals distributed in this country by Harwoods Business Systems of Watford.

This follows an agreement between the two companies, allowing the Byte Shop chain to sell the terminals over the counter.

The Volker Craig range con-

sists of two main variants, both of which have been previously aimed at the OEM market. The VC404 is the standard model, and is Teletype compatible. It has a detachable 12 character upper and lower keyboard, a 12 inch display, and a choice of speeds up to 19,200 baud. Above this in the range is the VC414 editing terminal, a buffered, micro-based unit that permits formatting and line editing.



TRAINING OFFICERS CORAL 66 COURSES

NEXT COURSE: APRIL 30th IN FARNBOROUGH, HANTS

This one week intensive course produces effective CORAL programmers. Practical "hands-on" experience is provided as lectures are closely linked to worked examples.

In addition to regular open courses, both CORAL 66 and MASCOT introductory courses can be provided at customers' premises.

Course organisers are premier suppliers of CORAL 66 and have made significant contributions to the research and development of MASCOT.

For further details contact:
Corinne Nixon
Systems Designers Limited
Systems House, No. 1 Pembroke Broadway
Cambridge, Surrey GU15 3KH
Telephone: Cambridge (0226) 82244

This is Lowndes-Ajax

- 370/158 Attached Processor
- 370/155 — both with MVS/TSO
- 3850 Mass Storage
- 3705 SNA Support
- Back-up Facilities
- Warrington Multiplexor
- Data 100 and TI Terminals
- Computer Output Microfiche
- Card Punching

- System 2000 Database
- Simplan Corporate Modelling
- General Ledger
- Accounts Receivable/Payable
- Fixed Asset Accounting
- Payroll Service
- Personnel Information
- Direct Mail

For further information on the range of responsive computing services offered by Lowndes-Ajax, please contact: Michael Reeve, Associate Director—Sales, at Lowndes-Ajax Computer Service Limited, Milton House, Milton Road, Croydon CR9 2XG. Telephone: 01-689 2244.

I am interested in..... Please contact me.
Name.....
Title.....
Company..... Lowndes-Ajax
Address..... Computer Service
Tel. No.....

A member of the ICI Group and founder member of the C.S.A.

By Martin Banks

Contract Steve Barr

market place

FOR SALE

Advertising Rates
PHONE 01-261 8293

CONTRACT or PERMANENT

We are the Specialists!
ANALYSTS PROGRAMMERS OPERATORS
VDU/KEY PUNCH OPS DATA CONTROLLERS

FOLIVE

Computer Services Limited
01-487 5781
(emp. only)

OPERATORS CONTRACT AND PERMANENT

FOR A PROMPT SERVICE
PHONE 01-439 6481 NOW

and speak to a top professional in an established company
(24-HOUR ANSWERING SERVICE)

EFFECTIA GRAVIS



EFFECTIA GRAVIS

For further details contact:
01-439 6481

ELECTRONIC BROKERS LTD

Specialists in DEC Minis, Printers & Terminals, VDUs ASCII Keyboards

WE SELL WE BUY

- HAZELTINE H-3000A VISUAL DISPLAY UNIT 2495
- SCODE DATA SERIES 100 MATRIX PRINTER 8985
- TILLYTYPE MODEL 33 INPUT/OUTPUT TERMINAL 6425
- ASCII Keyboard Speed/Receive 6425
- ASCII Keyboard Speed/Punch 6425
- DEC PDP11/04 PROCESSOR 42,500
- NEW ASCII ROM-PROGRAMMED KEYBOARDS 648.50
- 12168 66-keyboard keyboard mounted on PCB 648.50

Full range of spares and accessories also available

Send for new comprehensive catalogue covering our vast range of equipment or all our showrooms. Hours of business Mon-Fri, 9.30am to 5.30pm. Tel: 01-837 7781

ELECTRONIC BROKERS LIMITED
55 Pancras Road, London NW1 2DB
Tel: 01-837 7781 Telex: 298694

WEBSTER D/P SERVICES LTD.

FOR USED DP EQUIPMENT
BUY OR SELL THROUGH WDP

NEW DE LUXE 80 COLUMN
HAND PUNCHES (EX-STOCK)

01-464 9011
WEBSTER D/P SERVICES LTD.
85 WIMBORNE ROAD, BROMLEY
KENT BR1 3AA

THE HATFIELD POLYTECHNIC
MSc in INFORMATION SYSTEMS
MSc in COMPUTER SCIENCE
by Part-time, Day-Release Study

For further details, apply to:
Mrs. G. Tegg, School of Information Sciences
The Hatfield Polytechnic
PO Box 109, Hatfield, Herts
Hatfield AL10 0XT, ext. 331



G.D.L. COMMERCIAL DATA LTD., Downham Road, Ramdon Heath, Slough, Bucks.

IBM 18M IBM
029, 028, 059 EX-STOCK
• All fully refurbished
• Free warranty
• Guaranteed maintenance
• Various code options available
Tel: 0268-710292

MEMORY TYPEWRITER
IBM MC62

Price £4,800
IBM New £5,850
Contact: David Dowers, Chief Accountant
Printer: Computers, 01-940 1134, Telex 25774

COMPUTERS BOUGHT AND SOLD
FOR EQUIPMENT LTD.

Tel: 783-293818
Telex: 137743

FOR SALE
2200 WIKO Modular
Delivery
Model M01, Hardly used
Now price £582

Contact: J. Harrison
Tel: 0706-332881
Brook St, Bury (Manager)



Now! IBM 3277 Systems when you need them

(not when IBM can supply them.)

Where? From Dataserv, one of the worlds leading suppliers of used IBM Terminal Systems. So for:

- Fast delivery of 3277 crts, 3271/72 crts and 3284/86 printers
- IBM 3270 equipment delivered eligible for an IBM maintenance agreement
- The lowest priced 3270 equipment available
- Completely refurbished 3277 equipment

dataserv

3 Union Court, Richmond, Surrey TW9 1AA
Tel. 01-940 2321. Telex 926734

"We're changing the way people buy their IBM terminals"

DEC DEC DEC DEC DEC

PDP11/04 and 11/34 Systems and Peripherals for immediate delivery
Also various Refurbished PDP8 and 11 Systems, and Modules from stock

MM11/DP 18K Core Memory 1104/34 £1500.00
MM11/YP 32K Core Memory 1104/34 £2500.00
New ex-stock

S.K. SYSTEMS LTD.
Stevenage Road, Hitchin, Herts.
Tel: (0462) 35267
Telex: 826715 S.K. SYS.

WANTED ICI 470 EQUIPMENT

DPCE require, for immediate purchase, ICI 470 Equipment both CPUs and peripherals.
Phone Rod Marshall: Wokingham (0734) 780703

PDP 11/04*11/34*11/60 BASED COMPUTER SYSTEMS

FAST DELIVERY
KEEN PRICES

FROM SYSTEM
H.R. HOUSE, HIGH ROAD
NORTH FINCHLEY, LONDON N12
OAZ
01-349 2811
Telex: 28227

Knight is right for contract staff

Knight Computer Services Ltd.
14 Old Park Lane, London W1V 4NL
01-491 4706
Staff Service Division of BOC Data and Graphics
an advertiser of Computer Services Association

MODERN OFFICE FLOOR WITH COMPUTER SUITE TO LET

ACADEMIC HOUSE, OVAL ROAD, N.W.1
6180 SQ. FT.
Computer suite, fully air-conditioned, sold to very high spec.
Location: close to West End (and City) Building — prestige entrance, car parking on contract, uniformed security guards.
Sole Agents:
FOLKARD AND HAYWARD
115 BAKER STREET, LONDON W1M 2AY
TEL. NO. 01-938 7769

PEOPLE

Two directors for MSC Europe



Wieklin

THE newly formed UK subsidiary of Microcomputer Systems Corporation, MSC Microcomputers (Europe), has appointed Alan Wieklin as managing director. He is responsible for establishing a marketing and customer support network for the MSC range throughout Europe. Prior to his new appointment, Wieklin was sales and marketing manager for Borer Electronics, and before that was sales manager for the Ampex G8 computer peripherals group. His earlier career included the position of European sales and marketing manager for Friden International, Belgium.

John Barnes has been appointed technical director of MSC. He was formerly senior sales engineer with Ampex G8, and prior to that was technical support manager with GTE Data Products and Infotex.



Dillon

Dowson

Richard Dillon has been appointed European finance and administration director of Modular Computer Systems. He joins Modcomp from Honeywell where he was UK and European controller. Dillon will be based at the company's European headquarters in Wokingham, Berkshire.

Mike McCarty has been appointed by Honeywell Information Systems as customer services division manager for Ireland. He was previously technical supervisor for the customer services division's minisystems group.

Michael Hunt has been appointed vice-president of International operations with Management Science America. He was formerly director of international operations with Cincom. Also a former employee of Cincom, where he was general manager of their UK operation, is John Hale, who has become managing director of the new British subsidiary company, MSA Limited.

Richard Carter has joined Computer Machinery Company as territory manager responsible for sales in Essex and Suffolk. He was formerly a salesman with NCR. A former salesman with Burroughs, Philip Veness, has joined CMC as a territory manager responsible for sales in Gloucestershire, Berkshire and Oxfordshire.

Thomas Elrod, vice-president and general manager of the data systems division of Persee Computer Corporation, has been appointed as a senior vice-president. Ralph Gopal, who is vice-president and general manager of the peripherals division, has also been appointed as senior vice president of the company.

Rick Van Vleet has become product marketing manager for semiconductors with Saso. He was previously a senior component engineer with RS Components.

Anne-Marie Dowson has joined Arbat (UK) as administrator in the company sales and marketing department. She previously worked for Radifen Computers as administrative manager at the London sales office.

John Richards has joined the Terminal Systems division of Data Logic as a sales executive. He was formerly a banking consultant with ICL. Previously export sales manager for DRI at Staines, Michael Cooper has also become a sales executive with the same division of Data Logic, and Peter Morris has joined the Communications Product division as a sales engineer.

SOFTWARE FILE

By Peter Hewitt

Canadian system for OS program development

ANOTHER proprietary system has emerged in the critical field of interactive facilities for OS/VS1 following the launch of Altergo's Guts (Software File, March 22) and the European Software Company's Tone-3 (Software File, June 28, 1978).

Called OTS (Online Terminal System), the latest alternative was developed by Canadian European Systems of Vancouver, Canada, and, like Guts, the software also runs under all other OS versions, including MFT and MVT.

It is being marketed in Europe by a CES office in Dublin which has found a notable early customer in the Irish government's Central Data Processing Service. CDPS is running the software under VS1 on its 370/158 and 3031 in Dublin.

OTS is seen by the company primarily as an online program development system, providing a functional equivalent to IBM's TSO subsystem SPF. It could, though, be seen as a full alternative to TSO by those interested in program development features only.

Among its principal features are facilities for interactive compilation, execution and debugging. These support the usual range of development tools, such as the PL/I check-out compiler, and are backed up with interfaces to library systems including Panvel, Slick, and The Librarian.

The system in addition pro-

vides facilities for RJE, JCL syntax checkers, tools for data set and catalogue maintenance; a full screen editor; and terminal accounting statistics.

All of this driven by a simple command language, which can be built up into library procedures for handling repetitive functions.

CPU and memory requirements are notably lower than for TSO, with few users needing a region greater than 1/2 Mbyte. This would support around 15 terminals under VS1, depending

on the applications being run. Under MFT, a 200K byte region would typically support around six users, while a similar MVT region would support around nine terminals.

OTS has been on the market in North America for about three years and has 18 US users. It is priced in the UK at £12,000, with a 10% annual maintenance charge.

CES is also marketing a disc compress utility that is a direct replacement for IBM's IEH-DASDR, IEHMOVE, IEBCOPY, and IEHISAM.

Chief feature of the system, called CYV (Copyvolume), is speed. A full 3330-II can be copied and compressed in less than 12 minutes, and a full 3330 in less than 11 minutes. The software can in addition copy small groups of data and optionally reorganising them. CYV, which also includes a priced in the UK at £1,000 for disc-to-disc environment, and £1,500 for a system also handling backup FDR tapes.

Russia and Bulgaria sign licensing agreements with ADR

A NOTABLE breakthrough into marketing software behind the Iron Curtain has been achieved by Applied Data Research with the signing of agreements in Russia and Bulgaria. Government agencies in both countries have negotiated licensing agreements with ADR giving them access to nearly all the company's system software products.

Packages likely to be of particular interest include Roscoe, The Librarian and Volle, all of which will be run on the IBM-compatible Rjed ES series. The agreements do not at the moment appear to include the Datacom range of DBMS soft-

ware which ADR took over last year (Software File, August 31, 1978).

The closing of the deals follows software seminars held by the company in each country over the last two years. ADR representatives visited Sofia, the capital of Bulgaria, in 1978, having conducted presentations in Leningrad one year before. A feature of the latter was a demonstration of Roscoe running online to an ES series machine in Helsinki, Finland.

ADR products, which are handled in the UK and several other European countries by CAP-CP, are already extensively used in Western Europe.

Indeed this market accounts for around 75% of ADR product installations overseas, currently in excess of 3,000.

This, though, will be the first time that ADR has sold products in Eastern Europe. Understandably, sales of software to the Eastern Bloc are few and far between, but other instances to have occurred since the last year's SPL's supply of RTL software to Romania.

An ADR spokesman said that the implementation of the agreements had not yet begun, being dependent upon approval from the US Chamber of Commerce.

'Turmoil ahead' in semiconductors

IN 10 years from now there will be no large companies purely manufacturing semiconductors. This was the message put over by Lester Hogan, vice chairman of Fairchild Camera and Instrument Co, in a paper in which he suggested that the turmoil of the 1980s, which ultimately caused the downfall of most of the major discrete components manufacturers, could be repeated with today's big semiconductor firms.

Hogan stressed the need for semiconductor firms to integrate vertically by producing complete systems and also for them to develop a wide variety of low-cost devices which satisfied the demands of most customers.

"The semiconductor industry is no longer technology driven," Hogan asserted. "I am sure we have the capability to develop a chip with one million components, but who will want it? There will not be enough electronic systems in the world to use all the chips that the industry can produce."

"In five years' time the semiconductor industry will have the capacity to overkill the



Hogan

requirements of its customers. What it needs to do instead is to design chips that will minimise the total cost of a system. Remember, the 4-bit micro has far outstripped its bigger brothers and is continuing to do so."

Hogan believed that the cost of designing a microprocessor with a million components would be very high indeed, pointing out that a 16-bit micro with about 15,000 components takes about 10 man-years to design, while a million-

component chip could take up to 200 man-years and cost something like \$15 million.

"Even assuming that improved design aids will be available for designing a million-component chip the design time and cost will only be cut by a factor of four at the most."

Hogan intimated that he was impressed with the methods used by IBM in manufacturing the logic chips for its new 4300 series machines, in which it starts with a programmable emitter-coupled logic array and uses an electron beam to write custom designed circuits.

He felt that the direct write facility provided by electron beam technology would lead to it dominating the VLSI industry because of the ability it provided to custom-manufacture chips.

In the short term at least, Hogan saw considerable revenue growth for the semiconductor industry and predicted that sales would be worth about \$3,500 million by 1982.

Into chips too late?

"THE UK government has decided to go into silicon processing at a time when US venture capitalists have decided that it is no longer worth it and are putting their money into systems manufacturing."

This view on the prospects for Immos was expressed at the conference by Lester Hogan, vice chairman of Fairchild. Hogan presented a paper in which he asserted that in 10 years' time there would be no major firms involved purely in semiconductor manufacturing, and that there was a real danger that the semiconductor industry faced saturation of demand.

Role of the vendor

"THE entire computer industry, including IBM, will turn to the chip vendor industry for certain components," forecast Dick Petritz, managing director of Immos. He added that "64K dynamic RAMs are not likely to be made by computer companies for much longer; these companies are not in the 'jelly baun' business."

Petriz sees the electronic industry entering a fifth generation of electronics — the NMOS VLSI era — but he confesses to not knowing what lies beyond. CMOS technology will be the most common, although Schottky technology will have a port to play. A 32-bit microcomputer with on-chip 1,000K bit memory

is expected by the mid 1980s. Turning to investment, Petriz admitted that the semiconductor entry fee had become too high for the private investor, but he firmly believed that where sufficient venture capital was available there was clearly an opportunity to get a share.

Five components were necessary for success, Petriz listed these as: adequate finance, technological change (i.e. the Immos 64K RAM doing the job differently and better than others), market expansion, employing the best people, and finally, a true venture capital organisation with entrepreneurial structure and employee participation.

Leaders of international electronics and computer companies were among the speakers at a London conference last week, where the future of world electronics was discussed. GARETH JONES, MARTIN BANKS and KEITH JONES report on some of the highlights of the event, which was organised by the Financial Times.

Model for predicting effect of technology on jobs

A METHOD of measuring the relationship of technology to employment trends was described at the conference by Ian Mackintosh, chairman of Muckintosh Consultants. He said his mathematical model was based on reasoning put forward in 1972 by Stoner and Hague in their book, A Textbook of Economic Theory. In this they showed that only technical progress allowed consumers "the opportunity to satisfy progressively more and more of their wants", while at the same time maintaining economic growth.

This, said Mackintosh, was a basic tenet of economic theory that was little understood, either by the public or by governments. As an exercise at the conference he applied the model to the UK electronics industry, both by sector and as a whole.



Mackintosh

Taking the average production of the 45,000 employed in the computer manufacturing industry as \$25,300, and comparing it with the industry's trade gap (a net loss of \$210 million), it was possible to deduce the number of jobs "lost"

as 8,300. A similar exercise for the whole electronics industry showed 20,000 jobs "lost."

Using his model, Mackintosh predicted that in a "best case", one in which there was a low increase in productivity, employment would rise by nearly one million in the electronics industry by 1988. A "worst case" with large increases in productivity, employment showed a drop to about 250,000.

Mackintosh suggested that what must be done now was to carry out a similar exercise for all industrial sectors, especially the non-electronic sectors where the impact of technology was liable to be substantial. Only then would it be possible to construct realistic forecasts of future employment implications.

The more complex your real time application...

...the simpler your answer becomes.



VAX-11/780. Mainframe speed and size. Minicomputer cost and flexibility.

Digital has always been a real time specialist. And in the PDP-11 family there are already answers to almost every small and medium real time problem. VAX-11/780 is the long-awaited breakthrough at the top of the PDP-11 family. It's a 32-bit machine and a 16-bit machine in one.

VAX makes the family's flexibility and value available to people working right up in the top sector of real time applications — simulation, power control, aerospace, complex process control. VAX has a gigantic 32,000,000 bytes of address space. No matter how complex your application, you may never exhaust its possibilities.

VAX can be used not only with its own complete instruction set and complete software range, it also accepts the instruction set and software of the

PDP-11 family. This can be a tremendous advantage if your programmers are used to the PDP-11 family — even though the machine is so much bigger and more powerful it's still like sitting down with an old, familiar friend.

Price/performance? The simplest figure we can give you is this — two to one over the mainframe. Running at one-twelfth the speed of a conventional 60-bit mainframe — but costing only one twenty-fifth the price.

VAX-11/780 is the first in an entirely new family of 32-bit computers — its architecture and performance will be of interest to anyone facing a complex and demanding real time problem. To find out how simple and economical an answer it could be to your problem, use this coupon.

Digital, I'd like to complete answers on VAX-11/780. My application is in _____ Send me: A brochure on VAX-11/780. Your new corporate brochure. I have a sales engineer call me. Name _____ Title _____ Company address _____ Telephone _____ Send to: Terry Clark, Original Equipment, 200 Littleton Road, Reading, Berks, RG1 1AA.

digital

Digital Equipment Co. Limited

Systems Maintenance & Services Ltd.

For Nationwide Maintenance.

of your DIABLO DAISY WHEEL TERMINALS

Contact: R. E. Hare
SMS LTD.
Unitair Centre
P.O. Box 13
Great South West Road
Feltham
Middlesex, 01-751 4451

ADDS ONE AND ONE TO MAKE TWO NEW BARGAINS FOR BUSINESS OEM'S

System 75

small business system
52K microprocessor memory
1.5K on double-sided diskettes
High level languages
Commercial applications packages
Synchronous & asynchronous communications
Data entry software

- Added value for the small user

Regent 300

intelligent cluster system
52K memory
800,000 characters local storage
120 cps printer
IBM and ICL protocols
Up to 4 terminals
Communications interface

- Lower cost remote processing

We've sold over 100,000 CRTs to OEMs worldwide. More than anyone else

ADDS

Addis (UK) Ltd.

A subsidiary of Applied Digital Data Systems Inc.
Telford House, 23 Ashton Lane, Sale, Cheshire M33 1NP
Telephone: 061-999 7441

See us at
West Coast Show
April 3-5

Appointments

CHRIS PRIER
Assistant Classified
Manager
01-261-8028

LONDON
Edith Prier 01-261-8027
Mark Williams 01-261-8011
John Prier 01-261-8028
Kara Williams 01-261-8028
01-261-8174

MANCHESTER/GLASGOW
Owen Kelly 061-872-4211
BIRMINGHAM/BRISTOL
Basil McGowan 021-356-4838

RATES
£10 per single
column centimeter
SERIES DISCOUNTS
7-12%
13-24%
25-49%
50-59%

COMPUTER WEEKLY — Highest requested circulation at a cost per thousand 25% lower than the nearest competitor

MYRIAD

TECHNICAL SUPPORT MANAGER

MIDDLESEX

ENEG + CAR

The Management Services Division of Fiat U.K. is currently involved in an ambitious program to produce new systems for all the major divisions of the company. The hardware utilised by these systems will be an IBM 370/138, a PDP 11/70 and an Audio Response System.

In order to fulfil this commitment, we have built up a staff of 65 experts, but we still have a crucial vacancy: that of Technical Support Manager.

We are looking for a person, probably about 35 years of age, with a strong technical background in IBM DOS/VS and a working knowledge of minis and networks, who has had responsibility for a technical team over several years.

The Technical Support Manager reports directly to the head of management services and has a staff of four, three technical experts and a standards and training officer. Responsibilities include the technical evaluation of any hardware or software requirements of the system and programming and operations departments, optimising the utilisation of the hardware ensuring that new systems are designed to best utilise available facilities, and ensuring that standards are enforced.

The successful candidate must have sufficient managerial skill to be able to defend his/her opinions and decisions during open debate with a team of skilled young managers. Remuneration is negotiable and includes an excellent salary, bonus and other benefits in addition to a company car. To find out more about the potential with Fiat telephone Myriad Management Services to discuss this vacancy in greater detail.

Ref. SW2/2903

SYSTEM 3 PROGRAMMER

N. LONDON

Mortgage + Benefits + c £6000

Our client is an extremely successful company having the support of a major national banking group. Their well-established Data Processing department plays an integral part in the continued effective expansion of the company and now seeks an additional professional to consolidate the team.

An IBM System 3 Model 15D is in operation and present systems comprise both batch and on-line applications. Successful candidates can look forward to further on-line development and will be given every opportunity to progress into analysis. Ideally applicants should have two years' RPGII experience gained in a commercial environment, and although CCP knowledge is an advantage, training will be given where necessary.

The company is easily accessible by either road or rail and offers excellent company benefits together with the reassurance of a progressive and rewarding career. NON-CONTRIBUTORY PENSION SCHEME, FREE LIFE ASSURANCE and PROFIT-SHARING SCHEMES are only some of the benefits to accompany the attractive salary and MORTGAGE facilities.

Ref. N1/2903

ANALYST/PROGRAMMERS

SLOUGH

TO £8500

Our Client, a busy engineering company, is currently developing on-line real-time applications and is seeking several Analyst/Programmers at both the senior and junior level.

If you would like:

- * To receive training in advanced IBM software
- * Develop COBOL programs involving database and TP systems
- * Work on a variety of applications projects
- * Five weeks' holiday a year
- * Excellent starting salary and conditions of employment
- * To join an active sports and social club

— and you have a minimum of 24 months' programming experience, combined with some analysis involvement then this could be a good opportunity to accelerate your career.

Ref. NW1/2903

SYSTEMS PROGRAMMING

VME/B TRAINING

LONDON

TO £6750

Have you had the opportunity to work with 2800 software? Our client has recently installed a dual 2870 configuration. They now wish to increase their systems programming team by the addition of two programmers.

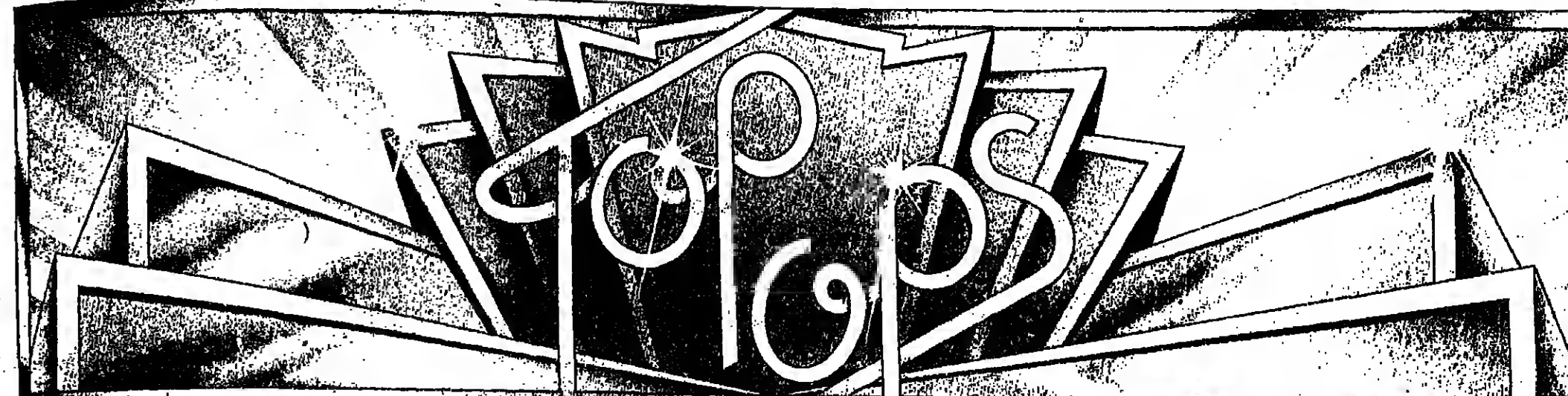
Applicants should come from a systems programming background and should have knowledge of GEORGE III or may possibly be acquainted with VME/B. The successful candidates will receive comprehensive training.

The installation is one of the largest and most advanced in the country. The systems programming section has the challenging task of tuning and maintaining the operating system and advising analysts and programmers on technical aspects of the operating system.

If this is the opportunity you have been waiting for telephone immediately for more details.

Ref. SE2/2903

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street London EC4Y 1AA
01-353 0981



IBM 370/138 DOS SHADOW **HERTS**
Ops. Manager wanted! Must have DOS & supervisory exp. Age 30-40. Upgrade to 148 in June. £7-8000 + 2 Med. Holidays a year. Call Elaine or Sally.

ICL 1801T GEORGE II **HARROW**
Operator required to work 3 shift system. 12 months' exp. Subs. canteen. £3,800. Call Sally or Elaine.

IBM SYS 3/MODEL 10 **LONDON, E4**
Excellent opportunity for Operator to go into programming in near future. 8 mths+ operating exp. RPGII advantage. £4,000 + ass. Call Elaine or Sally.

ICL 2803/4 EXEC. 2F **CROYDON**
Ass. Co. need exp. 2800 Operator. 1½-2 years. New installation. Days to start. Later 2 shifts. £4-4500 ass. Call Sally or Elaine.

HONEYWELL OPS — GCOS and OS 2000
Varied contracts — All areas — start immediately. £140 p.w. — Call Sue, Jane or June.

G3 TECHNICAL SUPPORT OFFICER
18 months' contract — 9/5 p.m. £180 p.w. neg. + bonus. For further details phone now.

ICL 2804 GEORGE I & II **LONDON, EC4**
Top job! Very friendly Co. in City, seek Operator with 12 mths+ exp. on ICL. £3,500 + neg. + bonus scheme. Call Elaine or Sally NOW.

IBM 370/138 DOS/VS/POWER **LONDON, E15**
Senior Op. for American Bank. 2 years DOS/VS/POWER 3 shifts + o/time. Mortgage subs. £5,000 neg. Call Sally or Elaine.

OS JCL WRITERS
Great opportunity — Luxembourg contract. Must have some degree of French.

DATA CONTROLLERS
Long term conversion contract. £125 p.w. + bonus. Split day shift. GIII exp. essential. Ring now for further details.

IBM 370 — DOS VS POWER OPS.
Middx. & London. For further details of those and other IBM contracts CALL NOW.

ICL 1900 GIII OPS **KENT**
£130 p.w. + Bonus. Immed. start. Ring June, Jane or Sue now!



Knights Computer Services Ltd.
14 Old Park Lane, London W1Y 4LL
Staff answer our 24-hour telephone service
and address your enquiries.

Knights Computer Services Ltd.

14 Old Park Lane, London W1Y 4LL
Staff answer our 24-hour telephone service
and address your enquiries.

01-491 4706

CH WHEATBUSBY 01-491 4706

TRIAD Computing Systems Limited

TRIAD

is 6 years old;
has first class offices in Central London and Guildford;
is 90 people strong;
is a £1 million p.e. company;
is continuing to grow and needs more people.

YOU

are looking for a career in a growing services company which puts technical achievement first;
offer above average commitment in your own chosen field of computing;
wish to broaden your horizons.

WE

would like especially to hear from you if you can offer relevant current experience in design and development in the following disciplines:

- commercial (mainframes to micros);
- telecommunications;
- database;
- automation;
- basic software.

are offering good career structure, salary progression, bonus, share purchase plan, season ticket scheme and opportunity to widen your computing perspective.

TOGETHER

we can build TRIAD into major multi-million service group for the 1980s in which you would add to your current achievement by adding to ours.

SALARIES £5,000-£8,000+

Write or ring: Erwin Schneider
TRIAD Computing Systems Limited, 42 Kingsway, London WC2B 6EX. 01-831 7211

MYRIAD

SYSTEMS ANALYST (Database Applications)

CENTRAL LONDON TO £7250

Variety, challenge, responsibility and real career potential; this post is with a fast expanding bureau marketing a comprehensive range of time sharing applications utilising powerful database and transaction processing software. The successful applicant would undergo a period of training in the first instance followed by a variety of small projects involving both in-house and on-site working, designing and implementing client systems.

Applicants will have a minimum of five years' commercial D.P. experience involving at least one project, carried from investigation through to implementation, together with an ability to function well in a customer orientated situation. Rapid promotion is a very real prospect for the successful applicant together with increased responsibility and rewards.

Ref: S5/2903

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street, London EC4Y 1AA
01-353 0981 (24 HOURS)

EDP SYSTEMS PROJECT MANAGEMENT Computer Manufacturer

Richmond c £9,000

OUR CLIENT is the UK subsidiary of a major international concern which manufactures and markets a wide range of computer systems and is one of America's six fastest growing corporations, having a compound growth rate in excess of fifty per cent.

THIS KEY POSITION reports to the Chief Finance and Administration Executive and guarantees exciting career progression for an 'achiever' who would take charge of a sophisticated mini computer system with eight inter-active stations, specialise and implement US developed accounting systems in the UK, and together with the Controller and a software house install live accounting systems to administer total financial control of the Company. Subsequently, the person appointed will develop branch/head office systems and controls including the effective use of sophisticated word processing.

APPLICANTS must have a combination of business and technical competence which will enable strong and effective project control to be provided from the evaluation of the clients needs through to the production of programming specifications in a sophisticated mini computer environment using Virtual Storage techniques. Solid achievement in the areas of financial and stock accounting is essential and will preferably have been gained within a large international organisation. Preferred age 28/35.

Write in confidence quoting CWF 305
to D.H. May - Adviser in the Company.

Peterson Davidson Ltd
3 Mandeville Place, Wigmore Street, London W1M 5LB Telephone 01-486 69

JBA

Systems Manager

North Oxfordshire

c. £9,000

Our client, a well known British engineering organisation, wishes to appoint a Systems Manager to take responsibility for the design, development and maintenance of applications for the Parts & Service Division. Candidates should have a minimum of six years experience in a commercial systems environment with at least two years in a position of responsibility. A background of manufacturing, stock control and distribution would be very desirable. Since the company may have to replace its hardware sometime in the future, knowledge of equipment selection, real-time and database systems would be an advantage. Generous salary and benefits.

Contact: Jim Baker

Systems Consultants

London

Up to £9,000

Our client, one of the largest software houses in Europe, has opportunities for professional staff to join an expanding consultancy team. The work includes advising clients on systems development, design and implementation of medium to large application and project management. Candidates should have at least five years experience in the design of commercial applications particularly where real-time or database techniques have been used. A proven background of project leadership is obviously an advantage.

Salary negotiable according to experience. Excellent career prospects.

Relocation assistance available.

Contact: Jim Baker

Programmers (Insurance Company)

Hampshire

up to £6,700 + mortgage subsidy +

One of the most prestigious insurance services companies in the UK with an impressive 40% growth factor last year, are recruiting additional staff for development work. Many systems are under way including installation of a DMS 2 database and a large real-time terminal network. Completion of these projects opens the way for a considerable number of additional systems thus ensuring creative work for the future.

Applicants must have sound COBOL experience and of least 18 months experience in a real-time environment, ideally using Burroughs equipment, but this is not essential.

First class location, outstanding employment package and realistic career prospects. Call for more details.

Contact: Mike Creomer

For further information on any of the above vacancies please contact the appropriate consultant. If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

JAMES BAKER ASSOCIATES, International Personnel Consultants
16 Maddox Street, London W1. Tel: 01-491 4478

DEC Analyst/Programmers

London/Home Counties

£6,000 - £8,500 + Bonus

This client is a city based software house which is continuing to attract development projects and PDP Turnkey assignments from a prestigious and growing customer base. On joining their team of consultants, successful candidates will have the opportunity to significantly contribute to the growth and expansion of this still small and versatile company - and be extremely well rewarded for doing so.

Preferred experience is of high-level programming on PDP-11's under RSTS/E, but any good mini experience is always considered. Bonuses and profit sharing can provide up to £1,500 pa on top of salary - each consultant has the chance to earn a stake in the company. An unusual and exciting opportunity.

Contact: Andy Wright

Programmer Analysts

SW London/Surrey

Start to £6,900 or £9,000

Specialising in the provision of conversion services to installations changing or upgrading hardware and software, this company offers a technically challenging career in a continually changing environment.

Candidates must have a sound knowledge of COBOL, and those with extensive experience of Honeywell are particularly of interest. Applicants already at a Senior Level will be considered for Project/Team leading positions, with start salaries of between £8-9,000.

If you relish the idea of travel (many of the company's projects are on the Continent) and variety and look forward to a technical career there is every chance that you may fit our clients' requirements.

Contact: Andy Wright

Fortran Programmers

London

to £7,500 + profit share

One of Britain's leading technical bureaux offering time sharing, conversational remote batch and hotel processing services through a network based on large mainframes need programmers to join an expanding technical support team. The work content is both interesting and varied with a high level of client contact. Candidates should ideally be graduates, able to show evidence of some prior experience of working successfully with users/clients and be able to carry out project work to a high degree of competence.

These posts will provide an opportunity for enthusiastic people to work in a sophisticated environment where a strong emphasis is placed on advanced software products and well qualified support staff. Contact: Margaret Stevens

SUPERVISOR, COMPUTER OPERATIONS

West End
Up to £8,800 p.a.

A leading petrochemical organisation is seeking a Computer Operations professional to be responsible for the day to day running of their computer room activities.

Their data processing function is centred on an in-house IBM 370/125 under DOS/VS and POWER/VS with RJE links to an IBM 370/158 MP under MVS/JES3 at their Hamburg location. It is, therefore, essential that the person appointed should have a strong IBM DOS/OS background. At least six years' operations experience including supervisory/management responsibilities in a medium/large IBM 370 installation is also required. You will most probably have also received some formal management training.

This position will use to the full your administrative, technical and management abilities for you will be responsible for controlling, motivating and providing technical guidance to an operations section of c. 10 people.

If you are between 25-35 years of age, show professionalism in appearance and manner and above all have the desire to succeed, then you will enjoy and appreciate this environment.

Based in a pleasant area of London, the company is offering a starting salary of £7,800 p.a. - £8,300 p.a., plus London Weighting Allowance (at present £548), Lunch on Vouchers (£1.05 per day), a very good contributory Pension Scheme, Membership of BUPA and four weeks' holiday.

Please apply to Marilyn Black, quoting reference 2328/CW.



RECRUITMENT CONSULTANTS

JOHN GOLDSMITH
(Computer Recruitment) Ltd, 15 BUCKINGHAM PALACE ROAD, LONDON SW1

Tel: 01-828 6356
Telex No. 916779

A company of the Provident Financial Group

JOIN US AND KEEP OUR DEVELOPMENT ON THE BOIL.

SENIOR DEVELOPMENT OFFICER up to £6861

Experienced analyst to initiate, develop and implement realistic computer systems.

SYSTEMS ANALYST up to £6060

Experience of all aspects of system design from specification to implementation and subsequent maintenance.

SENIOR PROGRAMMER up to £6060

Extensive experience with a thorough knowledge of COBOL and/or BAL.

Experience of CICS/VS, VANDL/1 (or DL/1) an added advantage.

We Offer:

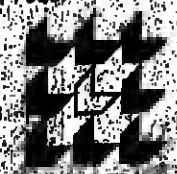
- * New projects
- * Teleprocessing experience
- * Job interest and career prospects
- * On the cash recycling machines
- * Starting salary dependent upon experience and qualifications
- * Comprehensive relocation package in appropriate cases.

We Require:

- * Good technical background
- * Management or supervisory experience or potential
- * Good communicative skills
- * Evidence of development achievement

All vacancies listed are open to male and female applicants. For further details and an application form, please write to the Director of Personnel and Management Services, New Walk Centre, Welford Place, Leicester LE1 6ZG or telephone 0533 549922 ex 11708.

Closing date for receipt of completed application forms is Wednesday 11th April 1979



STAR JOB SPOT

IBM OPERATORS

£4,000 to £6,200 the
LONDON & HOME COUNTIES
With over 70 vacancies for IBM professional operators and senior operators why not ring for a chat? Tricia CV13/1

DEC PROGRAMMERS

£4,600 to £8,800
LONDON & HOME COUNTIES
We now have commercial user organisations and 30 Software/Consultancy firms looking for DEC Programmers with 15 months' or more experience. Why not ring us now and enquire about your chance to improve both salaries and status. RSTS or RT-11 experience are added pluses. CV-13/2 MICHAEL

ICL COBOL PROGRAMMERS

£6,400
N.W. LONDON
Now is your chance to move on to the new ICL 2900 rings with two years' ICL 1900 COBOL experience. Excellent training facilities and one of the most modern installations in the country. Flexitime, staff canteen and an excellent S&S club. CV 13/3, MICHAEL

SYSTEMS ANALYST

£8,000
C. LONDON
A major retail organisation with a large investment in DP requires a well-qualified analyst with a solid COBOL background. The successful candidate will work in a stimulating environment and obtain 4 weeks' holiday, free lunches and generous discounts. CV-13/4, MICHAEL

FREELANCE VACANCIES

U.K.	to £300 PER WEEK
IBM RPG II ESSEX	3 MONTHS
ICL 2900 COBOL C. LONDON	8 MONTHS +
IBM COBOL CICS PETERBOROUGH	8 MONTHS +
IBM MVS IV OS C. LONDON	8 MONTHS +
VERTEX DATAPORT C. LONDON	8 MONTHS
HQS COBOL ST. ALBAN	3 MONTHS +

OVERSEAS	to £400 PER WEEK
IBM COBOL CICS OS SAUDI ARABIA	8 MONTHS +
IBM CICS OS PARIS	1 YEAR
ICL VMEK SPECIALIST (PROJECT LEADER) FRANCE	1 YEAR
ICL LOW LEVEL ASSEMBLER BRUSSELS	8 MONTHS
ICL COBOL GUI KUALA	8 MONTHS

Ring IRENE on 01-996 4146

PL1 PROGRAMMERS & AN/PROGS.

£4,200 to £7,700
S.E. ENGLAND
Are there any of you who are seeking a new challenge? We now have vacancies in the CITY, N. LONDON, ENFIELD, BEDFORD, MAIDSTONE, TUNBRIDGE WELLS, BRIGHTON, CROYDON, REDHILL, BRENTFORD, SLOUGH & HARROW. Come on, don't be shy, phone us NOW. CV 13/5, MICHAEL

UNIVERSAL COMPUTER ASSOCIATES LIMITED
01-995 3883 (01-958 6138 Evenings)
Data Express House, 3 Prospect Place, Heathfield, Sussex BN20 9JL

SALES ENGINEER— DATA COMMUNICATIONS

Location: SOUTH-WEST ENGLAND
REALISTIC EARNINGS: £16,000 +

Our clients, a progressive company in the field of Communications Networking Systems are offering a stimulating rewarding position to a **SALES ENGINEER** who will participate fully in the initial stages of a planned growth environment.

You should be able to demonstrate experience in front-line systems selling. It would be advantageous if you have technical experience within Data Communications but, above all, you must show the ability to relate closely to a customer requirement.

The successful applicant will receive a good basic salary in addition to a very lucrative commission scheme which offers tremendous financial possibilities. A comprehensive benefits package includes the provision of a **company car**.

For a confidential discussion and more details on the position described please contact Douglas Woodward on the number below or on Crayford 527062 after 7.30 p.m. or at weekends.

WARWICK WOODWARD ASSOCIATES
2 Hobart Place London SW1W 0HU Telephone 01-235 3215

**Make more
money
and
see the
windmills
free!**

Proost!

Holland, the most 'English' country in continental Europe, offers you windmills, water and wonderful opportunities for advancement. If you would like to earn around £13,500 p.a. as a Technical Author, any one of these opportunities could be yours.

1. Technical Author for writing manuals relating to logic analyser. Previous experience with logical analysers, data scopes or similar instruments. Initially six months duration, probably extended. (Ref: SCT 0301798).

2. Technical Author with a background in microcomputers, preferably at both H/W and S/W level. Ideally, candidate should have some experience of assemblers, operating systems etc. in a micro environment. (Ref: BCT 080279).

3. Technical Author with sound knowledge of optics and modern digital techniques. Ideally, candidate should be familiar with Time-Mechanics and High Voltage Systems. The work will involve writing service documentation (handbooks, operating manuals and information sheets) in the field of microscopy. (Ref: GWK 220379).

To take advantage of these great opportunities, call Geoff Ling at 01-235-3215, between 10.00 and 11.00 p.m. or write to: JWA, 2 Hobart Place, London SW1W 0HU.

Advance-and be recognised

Howard Organisation International Ltd.,
Employment Business Section, 115 Essex Way, Heathrow, Herts.

HOWARD

JBA

Senior Consultants

London/Home Counties Based c. £9,000

We have been retained by one of the largest Software Houses in Europe to assist with the appointment of two senior professionals into their consultancy group. The work includes taking responsibility for sophisticated projects, carrying out feasibility studies and implementing complex systems in a wide range of locations throughout the UK.

Candidates must have at least six years in the d.p. industry with four spent in the design and development of commercial applications, possibly as a project manager or DPM. Knowledge of database and real-time techniques would be an advantage.

Salaries are negotiable according to experience. Large company benefits including bonus and relocation expenses. Overseas opportunities also exist.

For an informal discussion please contact Jim Baker.

JAMES BAKER ASSOCIATES,
International Personnel Consultants,
16 Maddox Street, London W1
Tel: 01-481 4478.

SINGAPORE AIRLINES

COMPUTER CAREERS

SIA has installed an ITEL AS/8 computer and will be installing two IBM 3031 computers by July 1979. Several on-line systems are being planned for implementation in the next three years. IBM software used includes ACP/IPARS, IMS-DB/DC, OS/VS1, VM, CME and APL.

Computer professionals are invited to fill the following positions in Singapore.

APPOINTMENT
Projects Managers
Systems Analysts
Systems Programmers
Data Base Administrators

REQUIREMENTS
University degree with at least 2 years' relevant data processing experience

Salary will commensurate with qualifications and experience and will not be less than S\$27,000 per annum. (Current IATA exchange rate: £1 = S\$4.31695.) Successful applicants will initially be employed on a 2 to 3-year contract. On expiry of contract, they may be considered for permanent employment at salaries applicable to local staff.

Attractive fringe benefits include:

- ★ Free travel on company services during annual leave and concessional travel on attractive terms on other carriers; and
- ★ Free medical and dental treatment.

Applications containing full personal particulars including telephone numbers should be addressed to:

Information Services Manager
Singapore Airlines Limited
77 Robinson Road
SINGAPORE 1



To reach him before 12th April, 1979,
Interviews will be held in London in May.

MINICOMPUTER EXPERIENCE

GERMANY · BELGIUM · HOLLAND · UK

**TEAM LEADERS
PROGRAMMERS**

**£7500 + (UK)
£5500 + (UK)**

**£15000 + (OVERSEAS)
£12500 + (OVERSEAS)**

Applicants for the above positions will join our advanced systems division. They must have at least 3 years' programming experience, which includes a minimum of 1 year in a real time environment. Assembler, a maths or physics degree and experience in a scientific environment are also desirable.

Both the team leaders and programmers are required to join both existing teams and new teams working on development projects in a high technology environment.

For further details contact:

**DEREK ASHLEY
or PENNY BAILEY**

MARCOL

Total capability from the MARCOL Group
60 QUEENS GARDENS, LONDON W2 3AF TEL: 01-402 9355 (24 HOURS)

MINI COMPUTER SALES

ON QUOTA EARNINGS £14,000 +
**LONDON, BIRMINGHAM, MANCHESTER,
LEEDS**

This is an exciting opportunity to join an International Manufacturer/Supplier of mini computer systems who have a substantial and impressive Client base within the commercial market sector. As a Sales Executive you will be using your sales flair to solve some of the most challenging problems in the commercial world today with the confidence of knowing that working with you is one of the finest professional groups of pre- and post-sales support in the UK.

Applicants should possess:

- ★ previous experience of selling commercial mini computers or small business systems
- ★ a confident sales personality coupled with a proven, successful track record in selling.

All major Company benefits apply to these appointments, so if you are interested in working in a thoroughly professional environment and have the desire and ability to succeed with one of the world's leaders in this growth market sector then

CONTACT, without delay, RICHARD CHAMPION on: 021-236 3781 (24-hour answering service) or: Hagley 4166 (evenings and weekends).



Specialist Computer Recruitment Ltd

London 01-236 0673 Mandeville Place, Wimpole Street, London W1M 6LB
Birmingham 021-236 3781 35-37 Great Charles Street, Queensway, Birmingham B3 3JY
Manchester 061-823 0427 Blackfriars House, The Pavilions, Manchester M6 2JA

021-236 3781

VICTORIA APPOINTMENTS LIMITED

FOR THE BEST JOBS IN THE NORTH DON'T DELAY - PHONE VA TODAY!



MANCHESTER

Programmers

Salary up to £5,000

This large Manufacturing company seeks young programmers with 18 months+ experience in COBOL, preferably gained in an IBM mainframe environment, to join their O.P. Dept. currently engaged on developing on-line Manufacturing and Financial Systems, based on an IBM 370/158 using IMS with ROSCOE for program development.

The Company offers excellent training facilities with good prospects for personal progression.

Relocation expenses where appropriate.

Ref: CW20378

NOTTINGHAM

Senior Applications Specialist Up to c. £5,000

(Systems Analyst/Project Leader)

Systems Analysts

Up to c. £7,000

Up to c. £6,000

Our Client, an established systems house, supporting DEC mini computers, wishes to make the above appointments due to further planned expansion.

The successful candidate will have genuine capabilities, the systems analyst having been involved in systems analysis and design from feasibility to implementation, at general commercial accounting/manufacturing applications, etc., preferably in an ONLINE/MINI COMPUTER environment.

The Programmer should have sound experience of BASIC and/or COBOL, again preferably on minis.

Outstanding applicants with 1+ experience in mainframes, may be considered.

The Company offers excellent opportunities for personal progression together with the security of terms and conditions of employment akin to any large commercial concern.

Ref: CW40379

NORTH MANCHESTER

Senior Systems Analyst

Salary up to £7,000

Our Client, a major manufacturing company, has an opportunity for an experienced Systems Analyst preferably with a programming background.

Eventually this candidate will have sound systems analysis and supervisory experience having designed and implemented at least one major system. Previous experience of IBM equipment and on-line techniques would be useful.

The emphasis is on Business and Manufacturing systems in a CICS DL/I environment.

Ref: CW50378

MANCHESTER

Systems Programmer

(New Post)

Salary c. £6,000

Our Client, a leading Company in the Transportation field, wishes to appoint a Systems Programmer. The successful applicant will be engaged on the implementation of new operating systems, their improvement, review and support.

The Company operates a Univas mainframe supporting 40 VOLTs in local and remote locations.

The successful candidate must have 2 years' sound ASSEMBLER level programming together with experience of real time systems. Previous Systems Programming experience would be an advantage.

The Company is situated in a modern office block and offers excellent terms and conditions of employment, including opportunities for career progression.

Ref: CW10378

SHAW CARPETS BARNSELY, YORKSHIRE

Systems Analyst

Salary up to £6,000

This manufacturing company with a sophisticated O.P. organisation based on an IBM 370/138 under ODS/VS using CICS for real-time and local teleprocessing systems now requires a Systems Analyst to join their small enthusiastic team engaged on a variety of applications.

Ideally the successful candidate will have some knowledge of programming and be capable of working alone.

The Company offers first-class terms and conditions of employment. Assistance with relocation will be available where necessary.

Ref: CW20379

NORTH MANCHESTER

3 Systems Analysts

c. £5,760

This client engaged in Manufacturing and Distribution abroad, due to expansion, now requires to increase its systems teams with 3 Systems Analysts preferably with ICL 1900 experience and essentially with the following:

- On-line Systems Design
- Implemented at least one system
- COBOL Programming background

Hardware includes ICL 2960 under GEO II. Systems are also being developed on DEC minis. First-class terms and conditions of employment.

Ref: CW50379

For application forms in respect of these and many other vacancies, please contact: Miss Val Halliwell

VICTORIA APPOINTMENTS LIMITED, 24 MOSLEY STREET, MANCHESTER 2. 061-236 7319 (24-hr. Answering Service) and 061-236 7417. Home 061-440 8134

Bolton/Bury Computer Unit PROJECT LEADER

SALARY GRADE PO 1B £6895/£8513 (Inclusive)

An opportunity has arisen to join a well-established installation with ambitious plans for future development.

The successful applicant will lead one of three application development teams and will be expected to display the necessary qualities consistent with such a position. Applications are therefore invited from suitable persons with several years' experience in systems analysis, who are now seeking increased responsibility. A COBOL programming background would be an added advantage.

The Joint Computer Unit provides the data processing requirements for both Bolton and Bury Metropolitan Borough Councils, with a combined population of approximately 440,000. The existing hardware comprises an ICL 180K 1903T under George 3, supporting a number of local and remote terminals. Input is provided by Redifon Key to Disc equipment.

Benefits include a system of flexible working hours together with excellent holiday allowances.

Application forms from Personnel Officer, Town Hall, Bolton 22311 Ext. 587, to be returned by 20th April, 1979.

AGRICULTURAL RESEARCH COUNCIL INSTITUTE FOR RESEARCH ON ANIMAL DISEASES

SCIENTIFIC COMPUTER PROGRAMMER

Required to join Statistics Section involved in the development of database management and statistical computer systems. The successful applicant will work with statisticians in the section and collaborate with research staff. The Institute has remote links to an ICL 4/70-72 computer at Rothamsted Experimental Station. Qualifications: degree, HNC or equivalent, with experience in computer sciences, mathematics or statistics, at least 5 years' relevant experience for appointment to HSO.

Salary scales: Scientific Officer £2839 p.a. to £4415 p.a. or Higher Scientific Officer £4101 p.a. to £5448 p.a. depending on qualifications and experience. Non-contributory pension scheme.

Application forms: Secretary, Institute for Research on Animal Diseases, Compton, Nr. Newbury, Berks. RG16 0NN. Quoting ref: 306.

MEASUREX (IRELAND) LIMITED

Due to continued expansion, there are opportunities for five persons presently engaged in the Electronics/Computer industry who wish to expand into Digital Control, in our growing training department.

Salary Range:
£5,000 - £7,400

Whilst presently located at our manufacturing plant in Waterford, the training department will shortly re-locate to a purpose designed training centre currently under construction in Cork City.

WE ARE interested in talking to persons who are: At Senior Technical Level, preferably with several years' experience in the Electronics/Computer industry.

Recent Graduates, with an interest in Digital Process Control and willing to learn.

RESPONSIBILITIES OF TRAINING INSTRUCTOR:

Having completed appropriate training the successful candidates will join an established team of instructors in our training department. This team conducts courses for the company's Field Service Technicians and in addition are responsible for the design and development of new courses. Measurex Corporation is a leading manufacturer of Digital Process Control Systems for the paper, plastics, rubber and sheetmetal industries in Europe and internationally. The company offers excellent benefits including a contributory pension scheme.

Due to postal dispute please telephone for further details to:

Pat O'Neill, Marketing Manager
Measurex International Systems Ltd.
Monks Mead House, Hare Hatch
Twyford, RG10 8BA, England
Tel: (073522) 3871

Telecommunications Engineer

An experienced electronic/computer engineer for installation is required for the commissioning/maintenance of a new ICL 7502 computer terminal network, fully described and printers are to be installed by the end of the year, and after a period of training it is proposed to provide a centralised repair service. The data network will be based upon the Board's private PCM radio system. A knowledge of such systems is required. Applicants have served a recognised training and be technically qualified to at least HNC level in electronic engineering.

Earnings within the range £5,525/7,280 per annum.

For an application form ring David Gabriel on 061-534 5101, Ext. 252, to be returned to the Secretary, Norweb, Chestwood Road, Manchester M8 8BA by 20th April 1979.



MERSEY DOCKS AND HARBOUR COMPANY

COMPUTER OPERATORS

Salary £4,312-£4,993 (incl. shift premium)

Vacancies have arisen within the Management Services Department for experienced Computer Operators.

Applicants should have a minimum of 2 years' experience, preferably with I.B.M. equipment, and J.C.I. knowledge and tele-processing experience.

We are currently operating two I.B.M. 370/158 computers under D.O.S. V/S with PDWER.

Membership of a contracted-out Contributory Pension Fund is compulsory following a period of probation. Assistance with relocation expenses will be given in appropriate cases.

Application forms to be obtained from: Administration Manager (Personnel), The Mersey Docks and Harbour Company, Port of Liverpool Building, Liverpool, L3 1BF.

(Tel. No. 051-238 8010 ext. 2)

Application forms should be submitted by the closing date of 20th April 1979.

JBA

SYSTEMS PROGRAMMER

Surrey

£6,000-£7,700

Our client is a large organisation dedicated to, and using, the most modern mainframe equipment and systems available today. They are currently running an IBM 3082 (4MB) and a 3081 (2MB) with both on-line and batch applications incorporating OS/VS1, VM/CMS and CICS/VTAM, with the installation of MVS and SNA well underway.

A vacancy has occurred for an enterprising, relatively junior, Systems Programmer in the Technical Support team. Ideal applicants will already be familiar with performance orientated products and have a good knowledge of SYSGEN and operating systems. Total systems programming experience must be at least two years with an IBM installation of reasonable size.

This is an excellent opportunity for making that move onto the larger more powerful equipment, with the prospect of getting involved in real-time network systems. Good further training is available together with dedicated encouragement to accept responsibility, leading to rapid promotion and salary improvement. (Note salary range quoted is currently under review.)

Contact: Mike Creamer

JAMES BAKER ASSOCIATES
International Personnel Consultants,
16 Maddox Street, London W1.
Tel: 01-491 4478

Contract Vacancies



NORTH WEST

IBM 370 IMS Cobol Programmers
ICL 1904 George III Cobol/Plan Programmers
ICL 2900 CICS Cobol Programmers
ICL 2900 Fortran Programmers
Univac 1100 Assembler Programmers
PDP 11/70 Diabol Programmers
IBM System 3 RPG11 Programmers

YORKSHIRE

ICL 1900 CICS Cobol Programmers
ICL 2900 Cobol Programmers
IBM System 3 RPG II Programmers

NORTH EAST

ICL 1900 Cobol Programmers
IBM 370 Cobol Programmers
PDP 11/70 Basic + Programmers

SOUTH

Honeywell 66 GCOS Cobol Programmers
Honeywell 66 IDS/TDS Cobol Programmers
IBM 370 PL/1 Programmers
ICL 1900 Cobol Programmers
PDP 11/40 Basic + Programmers

SDM COMPUTER SERVICES

Freepost, Wirral, Merseyside L63 3AB

NAME

ADDRESS

TEL

We also have numerous permanent vacancies in North-west

SDM Computer Services

Broadway, Bebington, Wirral, Merseyside L63 5ND

Tel. 051-608 9365

ANALYSTS AND PROGRAMMERS FOR REAL-TIME SYSTEMS TO £7000

The INDUSTRIAL SYSTEMS DIVISION of GEMINI urgently require professional staff to meet the growing demand for their services in the industrial sector of the market.

We are interested in people with a minimum of two years' appropriate experience, with a knowledge of at least one high level language, such as CORAL, RTL/2, FORTRAN or BASIC, and/or Assembler on mini- or micro-computer systems.

We can offer you varied and interesting work within a well-defined but flexible career structure, coupled with a planned training program. Vacancies exist in both our Northern and Southern Divisions.

In addition to a competitive salary which is reviewed every 6 months, we offer a substantial bonus scheme, contributory pension scheme, and free life, health and accident insurance schemes, four weeks' annual holiday, plus generous allowances whilst working on clients' sites in the UK and Europe. Please phone or write to Trisha Williams at our London Office, or Alexia Hine at our Manchester Office.

Gemini Computer Systems Ltd.
Industrial South Division
Chesham House
40-44 Chesham Street
London SW1V 1HQ
Tel: 01-225 8834



Gemini Computer Systems Ltd.
Industrial North Division
Roberts House
80 Manchester Road
Manchester M14 7PL
Tel: 061-941 1822

PL1 PROGRAMMERS

City to £5500 + Mortgage
A national financial group require good PL1 Programmers to work on their twin 370/155's & new PDP 11 equipment.
They need around 15 MONTHS experience or more in PL1, COBOL or ASSEMBLER, & would also be willing to retrain in BASIC+ for new PDP 11 work.
Other attractions include Flextime, Bonuses, Subsidised Mortgages, & Loans after 6 months.

Reference PG 13/1

TECHNICAL CONSULTANT

C. London ££10,000
For people interested in the Software House environment there are currently vacancies in the Real Time and Communications fields within one of the best companies in London.
You should have 5 years experience in either message switching applications, sales support, PDP 11's, turnkey systems or data communications and wish to progress into a Technical Sales/Sales Support Role.
The company offers an excellent salary plus a full pension scheme, interest free season ticket loans, L.V.'s staff purchase facilities and a house purchase scheme.

01.439.7871 Reference HK 13/2

NEW COBOL PROGRAMMERS

Essex/London Borders Salary negotiable according to exp.

Our Client is seeking to complement their current Systems and Programming team with several experienced NEAT 3 or COBOL Programmers. Applicants should have a knowledge of NCR CRITERION (or CENTURY) hardware and operating systems. The applications cover stock control, branch charging and general administrative support in a retailing environment which can prove to be very challenging and demands quick response to user requirements. Any necessary training will be provided and benefits include a staff pension scheme, and a subsidised canteen, as well as a first class starting salary. If you would like to take up the challenge or require further information please ring at once.

01.439.7871 PHIL GASCOIGNE

COBOL PROGRAMMERS

City to £5300+Mortgage
A major financial organisation with an expanding ICL 2900 system is seeking several COBOL programmers. These positions will be ideal for people with 12 to 18 months experience on any mainframe, and who want ANALYSIS prospects.
The company offers high starting salaries, Season Ticket Loans, Flextime and a Subsidised Mortgage.

Reference PG 13/3

TECHNICAL CONSULTANT

City to ££7000
A well known Software House based in the City are currently seeking BASIC+ & BASIC+2 Programmers to work on their growing range of applications, covering both the Scientific & Commercial areas.

A minimum of 6 months Basic+2 or 12 mths Basic+1 is required and any knowledge of DEC Hardware would be advantageous.

The company offers very good salaries with other benefits including a bonus scheme.

01.439.7871 Reference HK 13/4

CONTRACTS

REGISTER NOW FOR IMMEDIATE & FORTHCOMING REQUIREMENTS THROUGHOUT

LONDON * U.K. * EUROPE

DUE TO OUR CONTINUALLY CHANGING REQUIREMENTS WE ARE ALWAYS INTERESTED IN HEARING FROM COMPUTER PROFESSIONALS WITH A SOLID D.P. BACKGROUND TO WORK WITH MAJOR CLIENTS WHO ARE ALWAYS ABLE TO OFFER A WIDE VARIETY OF INTERESTING & CHALLENGING REQUIREMENTS.

REMEMBER: WE PROVIDE TOP CONTRACTS WE PAY TOP RATES

CALL

BOB EDWARDS

TELEX 25851 01.439.1856

OPERATIONS SUPPORT

Sidcup to £5000

A large International Organisation based in an easily accessible part of N.W. Kent is currently looking for staff at various levels for their expanding technical support department. A minimum of 1 years operating or data control experience is required, preferably with some IBM OS JCL knowledge, although this is not essential.

The installation is linked via a Data 100 network to a large 370/158 running under OS/VS1. The technical support department operates a flextime system and therefore this is an ideal opportunity for operators to move from shift work into an interesting and demanding day only position.

There is a recognised company career path which includes the possibility of moving into programming in the future. Excellent staff benefits include discount on a wide range of products, staff restaurant, and an active sports and social club, one of the amenities being a swimming pool on site.

For further details call

Mike Harmer on 01.439.7871

OPERATOR: NCR CRITERION 8450

Essex/London Borders ££4000

We are seeking an Operator for our Client on an NCR CRITERION. They operate a 256K 8450 running three partitions utilising the B3 operating system. They have both batch and real time systems with hardware covering Disks, Tapes, two printers and over twenty online terminals including an online Document Reader, Printer and V.D.U.'s.

The applicant should be over twenty years old and have a current driving licence. The shift system operated is on a short three shift basis with limited night work. Staff benefits include an excellent subsidised restaurant and pension scheme.

If you would like to join the small team of operators running this system whether or not you have B3 experience (B1 experience will suffice) please contact

01.439.7871 SEAN O'NEILL

Datascene International Ltd. Telex 25851
Sceptre House
169-173 Regent Street
London W1K 7FB 01-439 1856

SENIOR PROGRAM DESIGNERS

£7,500 p.a.

Hoechst UK currently require three Senior Program Designers to work on a complete spectrum of applications. These will include the increasing use of "on-line" and "database" facilities (CICS/DL/1). Hardware is a 370/148 under OS/VS1.

The Senior Program Designers will be responsible for the technical aspects of project design, project implementation and the effective control of resources.

The experience required is ideally a knowledge of project planning and control techniques, systems design with project management capability and self-motivation. Experience of IBM Cobol or Assembler would be an advantage.

Based at Hounslow, West London, Hoechst UK's working conditions, benefits and development opportunities are commensurate with the drive and expansion of a professional data processing department.

For further information please contact (in strictest confidence)

MIKE BURTON at
DIRECT PROGRAMMING SERVICES LTD.
51 LONG LANE
WEST SMITHFIELD
LONDON EC1A 9EL — Tel: 01-606 1738 (24 hrs. service)

Hoechst

Hull College of Higher Education
SYSTEMS MANAGER

Applicants are invited from suitably qualified applicants for the post of Systems Manager within Computer Services. The Systems Manager is responsible to the Director of Computer Services for the maintenance and modification of operating systems software, the production and maintenance of the subsystems, which constitute the user interface to the computer system, and the supervision of systems programming and related establishment of programs and staff.

The College is in the process of relocating now hardware, to enhance its computer services. The Systems Manager will be involved in the selection process.

Applicants should have considerable experience of systems programming, most suitably on multi-computers such as DEC 4000 series or PRIME, and should possess a degree or equivalent qualification (such as BSC Part 1).

The appointment, which is full-time, will be on the Burnham Senior Lecturer Scale.

Salary Scale: Senior Lecturer

£8,061-£7,066 (bar) £7,872

The post is subject to NAC Conditions of Service.

Application forms and further details may be obtained from the address below, to which completed forms should be returned by the 10th April, 1979.

The Personnel Section
Hull College of Higher Education
Leazes Road, Hull, YO1 1TH
Telephone (0482) 41461

MANAGEMENT SERVICES DEPARTMENT

This advertisement appears with the permission of the New Town Staff Commission

COMPUTER OPERATOR

Grade TS (£3,732-£4,146)

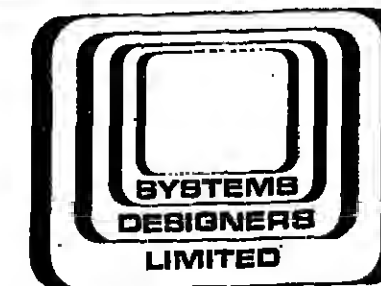
Experienced Computer Operator is required to take charge of a team of Operators working on an alternating shift system for which a shift allowance is payable. A knowledge of J.B.M./370 Series and Telexprocessing whilst not essential would be an advantage.

Application forms can be obtained from the Management Services Office, Town Hall and Civic Centre, Sunderland, or by post to the address below, to which completed applications should be returned not later than Thursday, 5th April, 1979.

For further details contact: J.A. BLOOM, Personnel Officer

Telephone: (061) 228 8305

Borough of Sunderland



Programmers & systems engineers in Manchester: up to £6,500

Systems Designers Limited is an independent British systems consultancy, backed by the N.E.B. and with an unrivalled reputation in mini and micro computer applications. Established in 1968 and currently 150 strong, the company is expanding its operations in both the UK and abroad. A full order book and continued demands for our high quality services have produced an immediate requirement for a number of professional programmers and systems engineers for our Manchester office.

Current projects are challenging and rewarding and the company policy of full participation of all members offers broad prospects and opportunities for rapid progress for top people.

Requirements exist for people with broad experience in the design and implementation of mini and micro computer systems using both assembler and high level languages. We are interested in hearing from programmers and engineers with at least one year's experience. Applicants must have good academic qualifications and a proven software ability, together with a professional outlook.

Please write to: telephone, John Bradbury at 511 North Woodlands Road, Altrincham, Cheshire WA14 1HG. Telephone: (061) 928 8305.



Gold Helm EXECUTIVE APPOINTMENTS

26 QUEEN SQUARE, BATH BA1 2HX
TELEPHONE: BATH (0225) 330311

A RARE BIRD

BUSINESS ORIENTATED ANALYST

is required by our client, a medium-sized manufacturing organisation, near BATH. Responsible directly to the Systems & Administration Manager, the person will be involved in liaison, support and running of mini-computer based systems within a small D.P. department which acts as a fast turn-around service bureau to the Company. A suitable person will:

- * have O.P. experience as Analyst and Programmer — ideally PDP 11/RS/TS/E.
- * have a good understanding of manufacturing applications — eg firm an O&M background.
- * ideally want full involvement with the Company and its aims.
- * be self-motivated and able to communicate at all levels.

Salary is £5K-£6K dependent on experience, with good prospects of promotion.

We can provide information on schools and housing in the area, so if you are interested please telephone

0225 330311

HARRISON LINE
SHIPPING - LIVERPOOL
PROGRAMMER

We operate regular sailings (Container/Conventional Cargo) to the Caribbean, Gulf of Mexico, South/East Africa and Bulk Carriers. We use a DEC 11/70 and a DEC 11/45 and some 30 terminals in Liverpool, London and Glasgow.

We require an experienced Programmer to join the small team responsible for the development and maintenance of this department. A working knowledge of Basic Plus and Fortran IV would be advantageous. Salary commensurate with experience. Good staff conditions.

Telephone or write to:

Mr. J. Harrison, Liverpool

145, 147, 149, 151, 153, 155, 157, 159, 161, 163, 165, 167, 169, 171, 173, 175, 177, 179, 181, 183, 185, 187, 189, 191, 193, 195, 197, 199, 201, 203, 205, 207, 209, 211, 213, 215, 217, 219, 221, 223, 225, 227, 229, 231, 233, 235, 237, 239, 241, 243, 245, 247, 249, 251, 253, 255, 257, 259, 261, 263, 265, 267, 269, 271, 273, 275, 277, 279, 281, 283, 285, 287, 289, 291, 293, 295, 297, 299, 301, 303, 305, 307, 309, 311, 313, 315, 317, 319, 321, 323, 325, 327, 329, 331, 333, 335, 337, 339, 341, 343, 345, 347, 349, 351, 353, 355, 357, 359, 361, 363, 365, 367, 369, 371, 373, 375, 377, 379, 381, 383, 385, 387, 389, 391, 393, 395, 397, 399, 401, 403, 405, 407, 409, 411, 413, 415, 417, 419, 421, 423, 425, 427, 429, 431, 433, 435, 437, 439, 441, 443, 445, 447, 449, 451, 453, 455, 457, 459, 461, 463, 465, 467, 469, 471, 473, 475, 477, 479, 481, 483, 485, 487, 489, 491, 493, 495, 497, 499, 501, 503, 505, 507, 509, 511, 513, 515, 517, 519, 521, 523, 525, 527, 529, 531, 533, 535, 537, 539, 541, 543, 545, 547, 549, 551, 553, 555, 557, 559, 561, 563, 565, 567, 569, 571, 573, 575, 577, 579, 581, 583, 585, 587, 589, 591, 593, 595, 597, 599, 601, 603, 605, 607, 609, 611, 613, 615, 617, 619, 621, 623, 625, 627, 629, 631, 633, 635, 637, 639, 641, 643, 645, 647, 649, 651, 653, 655, 657, 659, 661, 663, 665, 667, 669, 671, 673, 675, 677, 679, 681, 683, 685, 687, 689, 691, 693, 695, 697, 699, 701, 703, 705, 707, 709, 711, 713, 715, 717, 719, 721, 723, 725, 727, 729, 731, 733, 735, 737, 739, 741, 743, 745, 747, 749, 751, 753, 755, 757, 759, 761, 763, 765, 767, 769, 771, 773, 775, 777, 779, 781, 783, 785, 787, 789, 791, 793, 795, 797, 799, 801, 803, 805, 807, 809, 811, 813, 815, 817, 819, 821, 823, 825, 827, 829, 831, 833, 835, 837, 839, 841, 843, 845, 847, 849, 851, 853, 855, 857, 859, 861, 863, 865, 867, 869, 871, 873, 875, 877, 879, 881, 883, 885, 887, 889, 891, 893, 895, 897, 899, 901, 903, 905, 907, 909, 911, 913, 915, 917, 919, 921, 923, 925, 927, 929, 931, 933, 935, 937, 939, 941, 943, 945, 947, 949, 951, 953, 955, 957, 959, 961, 963, 965, 967, 969, 971, 973, 975, 977, 979, 981, 983, 985, 987, 989, 991, 993, 995, 997, 999, 1001, 1003, 1005, 1007, 1009, 1011, 1013, 1015, 1017, 1019, 1021, 1023, 1025, 1027, 1029, 1031, 1033, 1035, 1037, 1039, 1041, 1043, 1045, 1047, 1049, 1051, 1053, 1055, 1057, 1059, 1061, 1063, 1065, 1067, 1069, 1071, 1073, 1075, 1077, 1079, 1081, 1083, 1085, 1087, 1089, 1091, 1093, 1095, 1097, 1099, 1101, 1103, 1105, 1107, 1109, 1111, 1113, 1115, 1117, 1119, 1121, 1123, 1125, 1127, 1129, 1131, 1133, 1135, 1137, 1139, 1141, 1143, 1145, 1147, 1149, 1151, 1153, 1155, 1157, 1159, 1161, 1163, 1165, 1167, 1169, 1171, 1173, 1175, 1177, 1179, 1181, 1183, 1185, 1187, 1189, 1191, 1193, 1195, 1197, 1199, 1201, 1203, 1205, 1207, 1209, 1211, 1213, 1215, 1217, 1219, 1221, 1223, 1225, 1227, 1229, 1231, 1233, 1235, 1237, 1239, 1241, 1243, 1245, 1247, 1249, 1251, 1253, 1255, 1257, 1259, 1261, 1263, 1265, 1267, 1269, 1271, 1273, 1275, 1277, 1279, 1281, 1283, 1285, 1287, 1289, 1291, 1293, 1295, 1297, 1299, 1301, 1303, 1305, 1307, 1309, 1311, 1313, 1315, 1317, 1319, 1321, 1323, 1325, 1327, 1329, 1331, 1333, 1335, 1337, 1339, 1341, 1343, 1345, 1347, 1349, 1351, 1353, 1355, 1357, 1359, 1361, 1363, 1365, 1367, 1369, 1371, 1373, 1375, 1377, 1379, 1381, 1383, 1385, 1387, 1389, 1391, 1393, 1395, 1397, 1399, 1401, 1403, 1405, 1407, 1409, 1411, 1413, 1415, 1417, 1419, 1421, 1423, 1425, 1427, 1429, 1431, 1433, 1435, 1437, 1439, 1441, 1443, 1445, 1447, 1449, 1451, 1453, 1455, 1457, 1459, 1461, 1463, 1465, 1467, 1469, 1471, 1473, 1475, 1477, 1479, 1481, 1483, 1485, 1487, 1489, 1491, 1493, 1495, 1497, 1499, 1501, 1503, 1505, 1507, 1509, 1511, 1513, 1515, 1517, 1519, 1521, 1523, 1525, 1527, 1529, 1531, 1533, 1535, 1537, 1539, 1541, 1543, 1545, 1547, 1549, 1551, 1553, 1555, 1557, 1559, 1561, 1563, 1565, 1567, 1569, 1571, 1573, 1575, 1577, 1579, 1581, 1583, 1585, 1587, 1589, 1591, 1593, 1595, 1597, 1599, 1601, 1603, 1605, 1607, 1609, 1611, 1613, 1615, 1617, 1619, 1621, 1623, 1625, 1627, 1629, 1631, 1633, 1635, 1637, 1639, 1641, 1643, 1645, 1647, 1649, 1651, 1653, 1655, 1657, 1659, 1661, 1663, 1665, 1667, 1669, 1671, 1673, 1675, 1677, 1679, 1681, 1683, 1685, 1687, 1689, 1691, 1693, 1695, 1697, 1699, 1701, 1703, 1705, 1707, 1709, 1711, 1713, 1715, 1717, 1719, 1721, 1723, 1725, 1727, 1729, 1731, 1733, 1735, 1737, 1739, 1741, 1743, 1745, 1747, 1749, 1751, 1753, 1755, 1757, 1759, 1761, 1763, 1765, 1767, 1769, 1771, 1773, 1775, 1777, 1779, 1781, 1783, 1785, 1787, 1789, 1791, 1793, 1795, 1797, 1799, 1801, 1803, 1805, 1807, 1809, 1811, 1813, 1815, 1817, 1819, 1821, 1823, 1825, 1827, 1829, 1831, 1833, 1835, 1837, 1839, 1841, 1843, 1845, 1847, 1849, 1851, 1853, 1855, 1857, 1859, 1861, 1863, 1865, 1867, 1869, 1871, 1873, 1875, 1877, 1879, 1881, 1883, 1885, 1887, 1889, 1891, 1893, 1895, 1897, 1899, 1901, 1903, 1905, 1907, 1909, 1911, 1913, 1915, 1917, 1919, 1921, 1923, 1925, 1927, 1929, 1931, 1933, 1935, 1937, 1939, 1941, 1943, 1945, 1947, 1949, 1951, 1953, 1955, 1957, 1959, 1961, 1963, 1965, 1967, 1969, 1971, 1973, 1975, 1977, 1979, 1981, 1983, 1985, 1987, 1989, 1991, 1993, 1995, 1997, 1999, 2001, 2003, 2005, 2007, 2009, 2011, 2013, 2015, 2017, 2019, 2021, 2023, 2025, 2027, 2029, 2031, 2033, 2035, 2037, 2039, 2041, 2043, 2045, 2047, 2049, 2051, 2053, 2055, 2057, 2059, 2061, 2063, 2065, 2067, 2069, 2071, 2073, 2075, 2077, 2079, 2081, 2083, 2085, 2087, 2089, 2091, 2093, 2095, 2097, 2099, 2101, 2103, 2105, 2107, 2109, 2111, 2113, 2115, 2117, 2119, 2121, 2123, 2125, 2127, 2129, 2131, 2133, 2135, 2137, 2139, 2141, 2143, 2145, 2147, 2149, 2151, 2153, 2155, 2157, 2159, 2161, 2163, 2165, 2167, 2169, 2171, 2173, 2175, 2177, 2179, 2181, 2183, 2185, 2187, 2189, 2191, 2193, 2195, 2197, 2199, 2201, 2203, 2205, 2207, 2209, 2211, 2213, 2215, 2217, 2219, 2221, 2223, 2225, 2227, 2229, 2231, 2233, 2235, 2237, 2239, 2241, 2243, 2245, 2247, 2249, 2251, 2253, 2255, 2257, 2259, 2261, 2263, 2265, 2267, 2269, 2271, 2273, 2275, 2277, 2279, 2281, 2283, 2285, 2287, 2289, 2291, 2293, 2295, 2297, 2299, 2301, 2303, 2305, 2307, 2309, 2311, 2313, 2315, 2317, 2319, 2321, 2323, 2325, 2327, 2329, 2331, 2333, 2335, 2337, 2339, 2341, 2343, 2345, 2347, 2349, 2351, 2353, 2355, 2357, 2359, 2361, 2363, 2365, 2367, 2369, 2371, 2373, 2375, 2377, 2379, 2381, 2383, 2385, 2387, 2389, 2391, 2393, 2395, 2397, 2399, 2401, 2403, 2405, 2407, 2409, 2411, 2413, 2415, 2417, 2419, 2421, 2423, 2425, 2427, 2429, 2431, 2433, 2435, 2437, 2439, 2441, 2443, 2445, 2447, 2449, 2451, 2453, 2455, 2457, 2459, 2461, 2463, 2465, 2467, 2

Sales Professionals Major Manufacturer London, Birmingham, Manchester

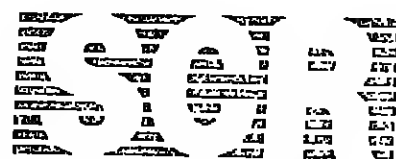
Achievable quota and excellent support - earnings in excess of
£14,000 + benefits

Our Client, a major International Mainframe and Mini Computer Manufacturer, are seeking additional sales professionals to work in London, Birmingham and Manchester. They offer the prospects of working within the majority of business environments, including commercial, Government and manufacturing. They require thorough sales professionals who may not currently be job hunting but have enough awareness to evaluate the market place and join an Organisation where five-figure earnings are the reality rather than the exception.

For further details contact:
Richard Champion

on 021-236-3781 (24 hour answering service) or Hagley 4166 (evenings & weekends)

Interviews to be held in London, Birmingham and Manchester.



London 01-935 0671 3 Mandeville Place, Wigmore Street, London W1M 5LB
Birmingham 021-236 3781 35-37 Great Charles Street, Queensway, Birmingham B3 3JY
Manchester 061-833 0427 Blackfriars House, The Personage, Manchester M3 2JA

Specialist Computer Recruitment Ltd

MARK IV PROGRAMMER TO £5,500

If you have at least 12 months' experience in MKIV, preferably under OS, then join at the start of a major phase of development on a project running on an IBM 370/158. Applications are also invited from programmers experienced in other languages who wish to learn MKIV.

As well as writing and maintaining application programs, the successful applicant will gain useful experience in analysing and designing systems enhancements.

For an application form, please write to or telephone: **Creig Thrussell, Whinney Murray & Co., Turquand Barton Meyhew & Co., 57 Chiswell Street, London EC1Y 4SY. 01-628 6088, Ext. 378.**

* CROYDON/CRAWLEY AREA *

* EXPERIENCED PROGRAMMER *

with one year's Fortran. Immediate start. Six months plus assignment, with expenses. Permanent or contract.

Contact: I. Gold or R. Carr on 01-388 0035.

FRASER WILLIAMS (LONDON) LTD.
38 Warren Street, London W1P 5PD

**Fraser Williams
Computer Consultants**

LONDON - LIVERPOOL - MANCHESTER - BIRMINGHAM - SHEFFIELD - GLASGOW - SPENCER

MYRIAD DATA COMMUNICATIONS

Sales Executives

Basic C £6000
+ Car

Quota
£12-14000

The continued technological advancement within the Data Processing Industry has enabled computer installations throughout the world to be brought together within seconds. A major "LINK IN THE CHAIN" is advanced data communications equipment where innovative technical skills have created an ever-increasing demand for this specialised equipment.

Our client is an established manufacturer of powerful and highly sophisticated communications equipment. The product range encompasses modems, multiplexors, and Data Network Management Systems. To cope with the upsurge in demand for these products, additional sales personnel are required for strategic areas throughout the U.K.

Ideal applicants will have previous experience of marketing data communications equipment or will have a strong background in service engineering where they will be able to relate confidently in technical issues.

An excellent basic salary is offered plus a generous commission scheme and company car. The current development and success the company is experiencing offer excellent career prospects geared to personal ambition and achievement.
Ref: N2/2903.

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street London EC4Y 1AA
01-353 0981 (24 HOURS)

UMIST LECTURER IN DEPARTMENT OF COMPUTATION

Applications are invited for the above post to develop research and teaching in the design and application of programmable microelectronic devices. Applicants (male/female) should have some experience in at least one of the following areas:

- CAD of digital systems
- Constraint Programming
- Cross translators facilities
- Distributed processing systems
- Interactive machines
- Microprocessor development systems
- Microprogramming
- Software reliability

The department of Computation has Undergraduate and Postgraduate courses and close links with the Microelectronics Applications Unit which provides an interface to the industrial community. The successful applicant will have the opportunity to collaborate with the Unit, for marketing industrial products or by participating in courses for the training of engineers in the application of microelectronics. The facilities in Computation comprise a PDP 11/34 system which hosts a microprocessor development environment plus a teaching laboratory with 6 PDP 11/03 systems. There is also ready access to the CRAM multi-run microprocessor research vehicle and to several Microprocessor Development Systems.

Salary will be on the scale £3883 or £7754, which is subject to a revision from October 1979 and a further award from October 1979.

Write for application forms quoting reference COM 745/86 to the Registrar, UMIST, P.O. Box 88, Manchester M60 1UD, to whom they should be returned by the 30th April, 1979.

WEST MIDLANDS COUNTY COUNCIL

WEST MIDLANDS POLICE SYSTEMS ANALYST/ PROGRAMMER £5232-£6060

To undertake feasibility studies, systems analysis, design and implementation, advice on computer requirements, evaluate systems in use and write, test and maintain programs. Applicants should have a relevant university/professional qualification and at least 2 1/2 years' experience in computing (not less than 2 years in systems design). Experience in the use of on-line or Management Information Systems advantageous.

Applications by letter only quoting pay grade, to the 237, full career and relevant experience to the County Personnel Officer, West Midlands Police, County Council, County Hall, Birmingham B4 7DQ, by April 15, 1979.

Telecomputing People

COBOL PROGRAMMERS - to £5,500 MANCHESTER AND OXFORD

Programmers with at least 12 months cobol experience, preferably ICL, to work in project teams on a wide range of applications. This is an ideal opportunity to get into online systems.

SENIOR PROGRAMMERS - to £6,600 MANCHESTER AND OXFORD

Experienced COBOL Programmers to work on a wide range of projects. Experience of online systems would be a distinct advantage. The range of projects is always varied and there are ample opportunities to work on customer sites if so desired.

SALES EXECUTIVE - £7,500 + commission + car MANCHESTER

We require a Sales Executive to cover the Northwest and sell TPS, Terminals and Project services. Computer experience is essential and a proven sales record a distinct advantage. Earnings potential is high and there are opportunities to advance into territory management.

SOFTWARE SUPPORT OXFORD - with OVERSEAS TRAVEL

We require experienced people to join our software support team. Ideally candidates will have sound on-line experience, preferably ICL 1900 and have worked with TPS. The job is varied and interesting with ample opportunity to travel overseas. With the availability of TPS under VME/B and VME/K later this year, this position offers an ideal opportunity to progress to 2900 series with the manufacturers of the world's leading TP monitor on ICL machines.

AUSTRALIA SYDNEY & MELBOURNE \$A 14,000 - 20,000

We require more experienced COBOL Programmers/Analysts with at least 2 years online experience, preferably including TPS, to work in Australia on a permanent basis.



Telecomputing provides advisory and implementation services for installing online computer systems around the world.

When you join us you are taking the opportunity to develop your career in a growth company.

We have an informal atmosphere and expect to reward people according to their effort.

If you are interested in any of these vacancies or would like to discuss a career with Telecomputing please or write to Chris Swinbank on Oxford (0865) 723621, Telecomputing, Seacourt, Tower, Westway, Oxford OX2 0ED

Offices in Oxford, Manchester, Amsterdam, Paris, Sydney, Melbourne

SENIOR PROGRAMMERS

Leeds to £5,750

Senior Programmers are required by our client to augment existing teams working on major new systems developments.

Advanced hardware is installed and wide use is to be made of database, on-line and real-time techniques.

To be considered for these outstanding opportunities candidates should have three years COBOL experience.

Interested? Call Ivor Norton quoting reference CW/79018.

Ivor Norton Management Services Ltd

P.O. Box 63, Copthall Tower House, Harrogate HG1 1TS. Tel: Harrogate 66628.

TIME FLIES YOU CAN'T THEY GO SO FAST

Simple punctuation can turn this seemingly meaningless phrase into grammatically correct English. A small prize is offered for the first one hundred correct answers received.

Inter-City Programming Support would also like to hear from Programmers requiring contract or full-time employment in and around the U.K. and Europe, with particular emphasis on the following experience:

UNIVAC 1100
IBM 370
IBM 1800
IBM 2303/4
IBM System 10
IBM 2300 Series

COBOL & ASSEMBLER
COBOL & ASSEMBLER
ASSEMBLER
ASSEMBLER
COBOL

*Knowledge of German language would be a great asset.

Inter-City Programming Support
Limited
Harpole, Northampton NN7 4DH
Tel. (0804) 831101
Telex: 311150 INTCIT G
Answerphone service outside
office hours

OPERATORS

JUNIOR AND SENIOR OPERATORS WITH A MINIMUM OF 6 MONTHS' EXPERIENCE ON ANY MAINFRAME REQUIRED URGENTLY. LISTED BELOW ARE A SMALL SELECTION OF CURRENT VACANCIES

ICL	GI	S/LDR	1 1/2 YRS	£5600
ICL	GIH	OPERATORS	1 YR	£4500
ICL	GIH	OPERATOR	1 YR	£4300
ICL	Z900	OPERATOR	1 YR	£4300
ICL	ANY	OPERATOR	9 MTHS	£4000
DEC	POP	OPERATOR	2 YRS +	£3600
HONEYWELL	OS2000	OPERATOR	1 YR	£4600
UNIVAC	EXECB	SNR DP	18 MTHS	£4500
HONEYWELL	GCOS	OPERATOR	1 YR	£4000
BURRO	B800	OPERATOR	6 MTHS	£3600
IBM	DS	S/LDR	3 YRS	£5600
IBM	DS	S/LDR	4 YRS	£5800
IBM	DS	SNR DP	3 YRS	£5700
IBM	DS	OPERATOR	1 YR	£4900
IBM	DS	OPERATOR	6 MTHS	£4200
IBM	ODS	S/LDR	2 YRS	£5600
IBM	ODS	SNR DP	2 YRS	£5600
IBM	ODS	OPERATOR	1 YR	£4750
IBM	ODS	OPERATOR	2 YR	£5600
IBM	ODS	OPERATOR	1 YR	£4900

DATA CONTROLLERS, ALL AREAS
£3000-£5000

TARGA COMPUTER SERVICES

3 LIVERPOOL STREET
LONDON EC2M 7NH 01-283 2751

MYRIAD

SYSTEMS ANALYSTS

SOUTH HERTS

CIRCA £7500 + BONUS

These positions will be filled by analysts with experience on large commercial systems or in the management of several smaller projects running concurrently. They will possess the personality to train and motivate a team of more junior analysts and programmers through all phases of development.

The successful applicants will be responsible for identifying user opportunities and preparing business proposals, including cost and benefit appraisals. They will have good business skills, allied to systems experience, to prepare valid proposals, plan project requirements/resources and gain user approvals.

During development the systems analyst will co-ordinate the work of his/her project groups, resolving technical problems, planning activities and reporting regularly to user management. A good knowledge of the company's policies and a thorough understanding of systems interfaces will be maintained.

Career prospects are first-class, with the company affording every opportunity to person's wishing to advance into a more senior role. Operating large IBM equipment, the data processing department services a wide variety of users in the U.K. and Europe. Extensive plans for additional hardware are soon to be announced.

The company is a very successful, international organisation situated on the outskirts of London in modern offices that overlook the countryside of Hertfordshire. Employee benefits include generous relocation expenses, an excellent pension scheme, a staff restaurant and a very active sports and social club.

Ref: S3/2903

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street London EC4Y 1AA
01-353 0981 24hours

ANALYST/PROGRAMMER

(Ref: CW/1/79)

The computing facility at our Teesside Oil Terminal is currently developing and updating both technical and commercial applications with the emphasis concentrated on on-line systems. Presently the existing site installation is IBM System 3/15D which is part of an expanding worldwide TP network based on 303X/37D equipment. Plans are already being made for replacement of the site installation equipment around 1980.

An opportunity is now available for an Analyst/Programmer to join our small, highly skilled team. Ideally the candidate will be of Degree/HND Standard, aged around 25/30 with an ability to communicate easily with a wide range of users ranging from accountants to engineers. Some TP experience and knowledge of COBOL will be an advantage.

Applicants who feel that they meet these requirements and would like to benefit from the highly competitive employment conditions this position offers should write or telephone to: Mr. A. Jackson, Industrial Relations Officer (quoting job reference number).

PHILLIPS PETROLEUM COMPANY

Teesside Operations, Seal Sands, Middlesbrough, Cleveland TS2 1UJ. Tel: 0642 54641



Computer Engineering Instructor

Control Data, worldwide leaders in all aspects of computer products require a Computer Engineering Instructor. The position is based at Control Data Institute near Oxford Circus W.1. The successful candidate will join a team of instructors responsible for training selected candidates for a career in Computer Maintenance Engineering.

A range of plug compatible peripherals. Experienced Customer Engineers with a flair for teaching or Engineering Instructors with experience in peripheral engineering are particularly invited to apply. A competitive salary package is anticipated for this unique and challenging opportunity.

Please telephone or write for an application form to the School Secretary, Control Data Institute, 77-79 Wells Street, London W1P 3RE. Tel: 01-4637 2171.



CTL need someone with two heads



Product Manager c £9000 + Car Allowance

Quite honestly at CTL we have a problem. We're looking for a person who can not only communicate with a highly skilled technical design team, but also communicate with and motivate an aggressive sales force. Such people can be hard to find...but when we do the rewards will be high.

As Product Manager, you'll be given full marketing responsibility for a group of products — working closely with other Product Managers to ensure full integration of CTL's market strategy. Your key responsibilities will be for product launches and promotions, keeping abreast of market development, ensuring product literature and training is available and to propose, initiate and progress

product and market development to maintain a competitive position for CTL. Candidates, male or female, should have a considerable background in software products and previous experience in a marketing environment. Creativity, persuasive ability and first class communication skills are desirable.

We can offer a salary in a range up to £9000 plus a car allowance and excellent company benefits include relocation expenses, where appropriate. Please contact Jim Paine, Personnel Officer, Computer Technology Limited, Eikon Road, Hemel Hempstead, Herts HP2 7EQ. Tel: Hemel Hempstead (0442) 3272.



The British Computer Systems and Software Company

Systems Analysts

Experienced in real-time and batch applications development, on Honeywell or Datapoint equipment. If then we've prepared something of genuine interest to you, it's an information pack on the benefits of working with us at our Stoke-on-Trent



H.Q. and it makes fascinating reading. Send for it by telephoning Stoke-on-Trent 451030 x 473 or writing to: Sellers, SPS, Michelin Tyre Company, Limited, Stoke-on-Trent ST4 4BT.

Switch to Michelin



Computer Operations Controller

The Harro Group operate an IBM 370/135 under ODS/VS. The system supports two batch partitions and a TP network. We have a vacancy for an Operations Controller to supervise a staff of 12 and to look after the day-to-day running of Data Preparation, Data Control and Computer Scheduling. The successful applicant will probably be a shift leader with at least three years' experience in computer operations and a knowledge of JCL for DQS. Familiarity with POWER, TASKMASTER and LIBRA-RIAN would be an advantage. We plan to convert to IBM 4341 in 1980/1. 35-hour week, 4 weeks' holiday plus 11 statutory days.

Please send brief details to:
Mr. G. C. Hooker, Group O.P. Manager
HARMO INDUSTRIES LIMITED
Wharfedale Road, Tysley, Birmingham B11 2DF

THE POLYTECHNIC, HUDDERSFIELD

Department of Computer Studies and Mathematics

SENIOR LECTURER OR LECTURER II

COMPUTING/INFORMATION SYSTEMS

(Ref. ACA/337)

The principal degree and diploma courses within the Department involve major studies of applications of computers in business, industry and public authorities.

Applicants should have appropriate practical experience of at least one of the following areas:

- a) applications programming
- b) design and implementation of data bases
- c) good business degree and/or MBCS is essential

Staff are expected to undertake activities, including research, in addition to teaching duties.

Salary: £16,665 - £20,000 (Ref: 27572)
L11 24101-26668

Please send details and application forms, with a recent photograph, to: April 1979, from the Personnel Office, The Polytechnic, Queensway, Huddersfield HD1 3DH. Telephone: 0484 22288/9/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/100/101/102/103/104/105/106/107/108/109/110/111/112/113/114/115/116/117/118/119/120/121/122/123/124/125/126/127/128/129/130/131/132/133/134/135/136/137/138/139/140/141/142/143/144/145/146/147/148/149/150/151/152/153/154/155/156/157/158/159/160/161/162/163/164/165/166/167/168/169/170/171/172/173/174/175/176/177/178/179/180/181/182/183/184/185/186/187/188/189/190/191/192/193/194/195/196/197/198/199/200/201/202/203/204/205/206/207/208/209/210/211/212/213/214/215/216/217/218/219/220/221/222/223/224/225/226/227/228/229/230/231/232/233/234/235/236/237/238/239/240/241/242/243/244/245/246/247/248/249/250/251/252/253/254/255/256/257/258/259/260/261/262/263/264/265/266/267/268/269/270/271/272/273/274/275/276/277/278/279/280/281/282/283/284/285/286/287/288/289/290/291/292/293/294/295/296/297/298/299/300/301/302/303/304/305/306/307/308/309/310/311/312/313/314/315/316/317/318/319/320/321/322/323/324/325/326/327/328/329/330/331/332/333/334/335/336/337/338/339/340/341/342/343/344/345/346/347/348/349/350/351/352/353/354/355/356/357/358/359/360/361/362/363/364/365/366/367/368/369/370/371/372/373/374/375/376/377/378/379/380/381/382/383/384/385/386/387/388/389/390/391/392/393/394/395/396/397/398/399/400/401/402/403/404/405/406/407/408/409/410/411/412/413/414/415/416/417/418/419/420/421/422/423/424/425/426/427/428/429/430/431/432/433/434/435/436/437/438/439/440/441/442/443/444/445/446/447/448/449/450/451/452/453/454/455/456/457/458/459/460/461/462/463/464/465/466/467/468/469/470/471/472/473/474/475/476/477/478/479/480/481/482/483/484/485/486/487/488/489/490/491/492/493/494/495/496/497/498/499/500/501/502/503/504/505/506/507/508/509/510/511/512/513/514/515/516/517/518/519/520/521/522/523/524/525/526/527/528/529/530/531/532/533/534/535/536/537/538/539/540/541/542/543/544/545/546/547/548/549/550/551/552/553/554/555/556/557/558/559/560/561/562/563/564/565/566/567/568/569/570/571/572/573/574/575/576/577/578/579/580/581/582/583/584/585/586/587/588/589/590/591/592/593/594/595/596/597/598/599/600/601/602/603/604/605/606/607/608/609/610/611/612/613/614/615/616/617/618/619/620/621/622/623/624/625/626/627/628/629/630/631/632/633/634/635/636/637/638/639/640/641/642/643/644/645/646/647/648/649/650/651/652/653/654/655/656/657/658/659/660/661/662/663/664/665/666/667/668/669/670/671/672/673/674/675/676/677/678/679/680/681/682/683/684/685/686/687/688/689/690/691/692/693/694/695/696/697/698/699/700/701/702/703/704/705/706/707/708/709/710/711/712/713/714/715/716/717/718/719/720/721/722/723/724/725/726/727/728/729/730/731/732/733/734/735/736/737/738/739/740/741/742/743/744/745/746/747/748/749/750/751/752/753/754/755/756/757/758/759/760/761/762/763/764/765/766/767/768/769/770/771/772/773/774/775/776/777/778/779/780/781/782/783/784/785/786/787/788/789/790/791/792/793/794/795/796/797/798/799/800/801/802/803/804/805/806/807/808/809/810/811/812/813/814/815/816/817/818/819/820/821/822/823/824/825/826/827/828/829/830/831/832/833/834/835/836/837/838/839/840/841/842/843/844/845/846/847/848/849/850/851/852/853/854/855/856/857/858/859/860/861/862/863/864/865/866/867/868/869/870/871/872/873/874/875/876/877/878/879/880/881/882/883/884/885/886/887/888/889/890/891/892/893/894/895/896/897/898/899/900/901/902/903/904/905/906/907/908/909/910/911/912/913/914/915/916/917/918/919/920/921/922/923/924/925/926/927/928/929/930/931/932/933/934/935/936/937/938/939/940/941/942/943/944/945/946/947/948/949/950/951/952/953/954/955/956/957/958/959/960/961/962/963/964/965/966/967/968/969/970/971/972/973/974/975/976/977/978/979/980/981/982/983/984/985/986/987/988/989/990/991/992/993/994/995/996/997/998/999/1000/1001/1002/1003/1004/1005/1006/1007/1008/1009/1010/1011/1012/1013/1014/1015/1016/1017/1018/1019/1020/1021/1022/1023/1024/1025/1026/1027/1028/1029/1030/1031/1032/1033/1034/1035/1036/1037/1038/1039/1040/1041/1042/1043/1044/1045/1046/1047/1048/1049/1050/1051/1052/1053/1054/1055/1056/1057/1058/1059/1060/1061/1062/1063/1064/1065/1066/1067/1068/1069/1070/1071/1072/1073/1074/1075/1076/1077/1078/1079/1080/1081/1082/1083/1084/1085/1086/1087/1088/1089/1090/1091/1092/1093/1094/1095/1096/1097/1098/1099/1100/1101/1102/1103/1104/1105/1106/1107/1108/1109/1110/1111/1112/1113/1114/1115/1116/1117/1118/1119/1120/1121/1122/1123/1124/1125/1126/1127/1128/1129/1130/1131/1132/1133/1134/1135/1136/1137/1138/1139/1140/1141/1142/1143/1144/1145/1146/1147/1148/1149/1150/1151/1152/1153/1154/1155/1156/1157/1158/1159/1160/1161/1162/1163/1164/1165/1166/1167/1168/1169/1170/1171/1172/1173/1174/1175/1176/1177/1178/1179/1180/1181/1182/1183/1184/1185/1186/1187/1188/1189/1190/1191/1192/1193/1194/1195/1196/1197/1198/1199/1200/1201/1202/1203/1204/1205/1206/1207/1208/1209/1210/1211/1212/1213/1214/1215/1216/1217/1218/1219/1220/1221/1222/1223/1224/1225/1226/1227/1228/1229/1230/1231/1232/1233/1234/1235/1236/1237/1238/1239/1240/1241/1242/1243/1244/1245/1246/1247/1248/1249/1250/1251/1252/1253/1254/1255/1256/1257/1258/1259/1260/1261/1262/1263/1264/1265/1266/1267/1268/1269/1270/1271/1272/1273/1274/1275/1276/1277/1278/1279/1280/1281/1282/1283/1284/1285/1286/1287/1288/1289/1290/1291/1292/1293/1294/1295/1296/1297/1298/1299/1300/1301/1302/1303/1304/1305/1306/1307/1308/1309/1310/1311/1312/1313/1314/1315/1316/1317/1318/1319/1320/1321/1322/1323/1324/1325/1326/1327/1328/1329/1330/1331/1332/1333/1334/1335/1336/1337/1338/1339/1340/1341/1342/1343/1344/1345/1346/1347/1348/1349/1350/1351/1352/1353/1354/1355/1356/1357/1358/1359/1360/1361/1362/1363/1364/1365/1366/1367/1368/1369/1370/1371/1372/1373/1374/1375/1376/1377/1378/1379/1380/1381/1382/1383/1384/1385/1386/1387/1388/1389/1390/1391/1392/1393/1394/1395/1396/1397/1398/1399/1400/1401/1402/1403/1404/1405/1406/1407/1408/1409/1410/1411/1412/1413/1414/1415/1416/1417/1418/1419/1420/1421/1422/1423/1424/1425/1426/1427/1428/1429/1430/1431/1432/1433/1434/1435/1436/1437/1438/1439/1440/1441/1442/1443/1444/1445/1446/1447/1448/1449/1450/1451/1452/1453/1454/1455/1456/1457/1458/1459/1460/1461/1462/1463/1464/1465/1466/1467/1468/1469/1470/1471/1472/1473/1474/1475/1476/1477/1478/1479/1480/1481/1482/1483/1484/1485/1486/1487/1488/1489/1490/1491/1492/1493/1494/1495/1496/1497/1498/1499/1500/1501/1502/1503/1504/1505/1506/1507/1508/1509/1510/1511/1512/1513/1514/1515/1516/1517/1518/1519/1520/1521/1522/1523/1524/1525/1526/1527/1528/1529/1530/1531/1532/1533/1534/1535/1536/1537/1538/1539/1540/1541/1542/1543/1544/1545/1546/1547/1548/1549/1550/1551/1552/155

I.M.S. PROFESSIONALS FOR U.S.A. & HOLLAND...

YOUR CHOICE

RENDECK is an established international group of Software houses operating in Netherlands, United States and United Kingdom.

The Dutch Company, based in Amsterdam, is involved in various aspects of the computer industry - consultancy and product development, software marketing and support, and hardware marketing and support. We are at present looking for IMS professionals wishing to work on a variety of projects in the Amsterdam Area.

The American Company, with its head office in Boston, is mainly concerned with the development of large teleprocessing and database projects. Requirements exist for all levels of staff in different locations throughout the States, especially on the West Coast.

YOUR SKILLS

We are interested in meeting IMS personnel from all levels within the industry ranging from programmers through to systems designers. You will need an in-depth knowledge of IMS (at least three years' experience) within the commercial sphere of applications and a willingness to be part of a dynamic team of computer professionals.

YOUR REWARDS

As well as the opportunity to develop your career within a fast growing international environment you will receive above average salaries, good expenses, medical and social benefit insurance in the U.S.A., return air flights for you and your family, plus many other benefits that you would associate with this type of appointment.

TAKE OFF TODAY: CONTACT
Bridget Kitchie, RENDECK LTD, 100 New Bond Street
London W1Y 9LF. Telephone: 01-629 5438/6088



PROGRAMMERS & OPERATORS

FREE LIST
of vacancies to suit you
ALL AREAS
Phone now 01-526 0111

The best CHOICE of
Computer Appointments
CIRCA 129 Cannon St
London EC1A 3JF
Tel 01-526 0111

£4000-
£7000+
North+Midland
Analysts &
Programmers
081-832-4184
(Transfer charges, if necessary)
Sampson Staff

THE UNIVERSITY OF AUSTON IN BIRMINGHAM COMPUTER OPERATION

Applications are invited for the post of
Computer Operator in the University's
Computer Centre. The University of
Aston is a leading research institution
with a reputation for excellence in
the field of computer science. The
post is a full-time position, Monday to
Friday, 9.00 am to 5.00 pm. Salary
Scale £24,000-£35,000 per annum.
Application forms available from
Mr A. G. Ross, Staffing Officer,
The University of Aston, Birmingham,
B4 7ET, or by post to the same
address, enclosing reference number 01/19/02.

UNIVERSITY OF GLASGOW ICL 2903 COMPUTER OPERATOR

required for Finance
Office. Experience of
operating a similar system
an advantage. Salary
according to age and ex-
perience. Superannuation
scheme.

Applications giving details of education, age
and experience, should be
addressed to The
Finance Officer, University
of Glasgow, Glasgow
G12 8QQ.

MULTI-ACCESS

On-line programming of a com-
mercial system on a mini.
Two freelance programmers re-
quired to start work urgently using
high level language, location W1
Wing. Fax: (01-629) 5765.

SITUATION WANTED

On West Coast of America, for
Systems Programmer with
years experience of OS/VS1,
CICS, Assembler, IBM 370/158.
Currently employed within insu-
rance field. Please reply to: J. R.
Peters, P.O. Box 42273, Ford-
burg, 23333, Johannesburg, South
Africa.

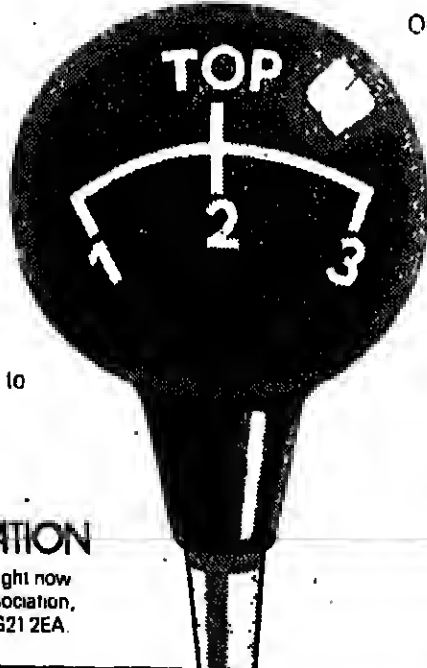
Computer Operators Shift your career into top gear

As the world's leading motoring organisation, the Automobile Association is fast developing its marketing activities in travel, insurance and mail order areas.

MOVE forward to a new generation of computers. We will provide comprehensive 2900 and C.O.M. training, then further training to develop your potential for managerial positions.

MOVE up to a Senior Operator post. If you have 18 months or more ICL 1900 operating experience you could start at this level on a salary of up to £5,500 p.a. (incl.). You will enjoy complete job involvement from start to finish and promotion prospects to £7,500 p.a. (incl.).

MOVE to the pleasant rural surroundings of Basingstoke.



Our shift system will allow you to enjoy a real social life, (weekend working is on a voluntary basis) - in the countryside or in town - London is only 45 minutes away. There is a wide variety of private housing available and the bright modern town centre gently combines now with old.

Our Computer Centre in Basingstoke currently operates three 2960's running under DME with VMEB development in progress. An on-line communications system is being developed and machine resilience is offered by peripheral switching.

A total of 18 MT 200's, 24 EDS 200's and 524/30/111600's support the three 2960's.



THE AUTOMOBILE ASSOCIATION

If you are an experienced operator, get into motion right now by contacting: Bernard Burton, The Automobile Association, Forum House, Basing View, Basingstoke, Hants. RG21 2EA. Telephone: Basingstoke 62971.

Jack and Jill went through the mill...
and got a proper grounding!

West Country

Our client is an international leader in Electronics development, with a £200-million turnover. Situated in the glorious West Country, it offers easy access to coastal and inland attractions, including the historic cities of Bath and Bristol.

Senior Programmer/Analyst up to £7,500
Perhaps we are asking too much, but ideally you will be familiar with DEC machines programmed in CORAL (MASCOT structuring) and be experienced in real time systems.

You will have at least four years post-graduate experience, your degree or equivalent having been in Computer Science, Mathematics or Electronics.

Programmer from £5,000
You will have proven ability in a high level language, backed by a degree or equivalent in Computer Science, Mathematics or Electronics.

Both the above posts attract a comprehensive range of fringe benefits including relocation assistance where appropriate.

Telephone Patricia Vernon Bristol (0272) 299854,
or write to PER, Minister House, 27 Baldwin Street,
Bristol.

Applications are welcome from both men and women.

university of wales college of swansea

Interactive Computer Graphics Facility

System Manager

Applications are invited for the post of System Manager in the Department of Staff Development, where the ICL 1900 computer has been upgraded to include an interactive graphics facility. The post holder will be responsible for the day-to-day operation of the facility, including the management of the system, the provision of training and support to staff, and the maintenance of the system. The post holder will also be responsible for the development of the facility, including the acquisition of new hardware and software, and the development of new applications. The post holder will be required to work on a full-time basis, Monday to Friday, 9.00 am to 5.00 pm. Salary Scale £24,000-£35,000 per annum. Application forms available from Mr A. G. Ross, Staffing Officer, The University of Aston, Birmingham, B4 7ET, or by post to the same address, enclosing reference number 01/19/02.

Data Processing Manager

London Oil Medina, which markets edible oils and fats and is part of a British owned international group, requires a Data Processing Manager at its Camberwell, London head office.

Reporting to the divisional accountant he/she will be responsible for a data processing section of seven and for ensuring an effective data processing service to the company.

Applicants, ideally 30-40 years of age, must have several years' relevant experience, including operation and programming of IBM equipment in RPG 11. The present hardware is an IBM system 32, which is likely to be upgraded to a system 34.

Salary is negotiable and a contributory pension and life assurance scheme is in operation.

Please write or phone for an application form to-

LOM Mr E. J. Warren, Divisional Accountant,
London Oil Medina Ltd, 161 Camberwell Grove,
London SE5 8JY Tel 01-733 6844

Analysts and Programmers

See
America
with
Informatics

Above Average Salaries
to \$25,000.00
Plus
Bonus
at
Completion
of
Assignment

Informatics Offers

- Openings at all levels
- An opportunity to move up into the management of this world-wide organization
- Extensive training on IBM/370 concentrating on data base and on-line systems
- Free training materials
- Nation-wide assignments in the U.S.A.
- World-wide assignments upon return to the U.K.
- Relocation air fare paid to the U.S.A. as well as return fare to the U.K.
- Generous cash allowances in addition to air fare
- Dependent relocation paid in full
- Paid vacations
- Paid sick leave
- Paid holidays
- Free medical insurance
- Free life insurance

Expense paid interviews in London during the week of April 2, 1979.

To arrange a confidential interview at our London office, send resume immediately or telephone Miss Angela Nanni on 01-405 8546 beginning Friday, March 30 (reverse charges accepted).

Informatics Inc

Office House
84-78 Kingway
London WC2B 6AL
01-405-8546



PLEASE WRITE TO US OR TELEPHONE TO MAKE IMMEDIATE ARRANGEMENTS FOR INTERVIEWS
TO TAKE PLACE IN EITHER LONDON OR THE SOUTH

April 1850

PERFORMANCE ANALYST

COMTEN is a well established computer performance measurement products firm based in the United States with offices worldwide. We are presently expanding our London office with the addition of two Performance Analyst trainees.

Analysts will work with our Dynaprobe Hardware Performance Monitor systems in primarily a sales and customer support environment. In addition, there is the occasional opportunity to conduct hardware monitoring studies as a consulting service to clients.

Successful applicants will spend 4 to 6 weeks at our International HQ in the USA undergoing formal training, followed by on the job training with experienced members of the London staff.

If you have two or more years' experience working with medium scale computer systems in programming, support, operations or hardware maintenance, you are a potential candidate.

Salary negotiable up to £6,000 p.a. based on experience.

Please write or call, giving career resumé, to:

Max Mahanke, General Manager
COMTEN (Performance Systems) U.K. Ltd.
23/24 Great James Street
London WC1N 3ES
Tel: 01-405 0085

 **COMTEN**
(Performance Systems) UK Limited

M700 Be F100-L at the front selling Ferranti Microcomputers

The Products

The Ferranti range of microcomputers includes the F100-L single chip 16-bit bipolar microprocessor and the bit-slice based ARGUS M700.

The exceptionally versatile F100-L is established across a wide variety of both civil and military applications and, with its expanding range of support chips, is now entering volume production with £95,000 approval becoming available. F100-L is supported by both high level (CORAL 66) and low level (Assembler) support software which is available in both cross product and resident forms, the latter running within an F100-L Microcomputer System.

ARGUS M700/20, the first military LSI version of the successful Ferranti ARGUS 700 range of real time computers, is specifically designed for hard environment applications within all three armed services. M700/20 uses state-of-the-art bit-slice elements and further members of the range will benefit from the extensive use of advanced Ferranti LSI techniques.

The Job

An expansion of sales effort is now necessary to handle both the increased product range and the high level of customer interest that has been shown. This has led to vacancies for SALES ENGINEERS based at Bracknell in Berkshire.

Successful applicants, male or female, will be responsible for the continued expansion of our customer base, both at home and abroad, and for further liaison with existing customers.

Opportunities also exist for participation in seminars and exhibitions.

The Person

Applicants should possess either a degree or HNC in a relevant subject and have had at least 2 years' involvement with either computers or microprocessors.

Experience in hardware and/or software techniques is required. Applicants with expertise in only one of the above areas should have a working knowledge of the other discipline. Selling experience is not necessary as appropriate training will be given, but the ability to establish a professional relationship with customers is essential.

The Reward

A salary will be paid commensurate with the importance attached to these positions. The overall package will include overtime allowances, a company car, a productivity bonus scheme and the other usual benefits of working with a large company.

Apply to:

Personnel Recruitment,
Ferranti Computer Systems Limited,
(Bracknell Division)
Western Road
Bracknell, Berkshire.
Please quote reference D/908/CW

FERRANTI
Computer Systems

Systems Specialists with Database and Data- Communications experience

In Holland you can earn £12,000-£15,000!

Experienced DB/DC Specialists

You should have experience of a high level language and at least 5 years mainframe systems experience, preferably with IBM 370-OS. Database and Data Communications expertise is essential. You should be skilled in CICS, IMS, MVS, or VM. If you're no more than 32 years old, then you could be the person we're looking for. We can offer you many opportunities for extending your knowledge and experience to fit the changing demands of the 1980s. This means real career progression for you. The salary you'll receive in Holland will be the equivalent of between £12,000 and £15,000.

Cobol Programmers In Holland you can earn £8,000-£12,000!

Cobol Programmers

You should have at least 3 years IBM Cobol experience, preferably with OS/DOS, JCL. We need you to join our team of Cobol coaches, who give individual programming instruction on our courses given by our education department. We will give you 2 months training to acquaint you with our programming standards. The salary you'll receive in Holland will be the equivalent of between £8,000 and £12,000.

Volmac: Holland's Leading Software House

Our twelve years in the business have taken us to the top. And we're still growing. By ensuring that all our 400 employees are of the highest standard, and by our quality of service, we've earned ourselves an enviable reputation. This means that those able to meet our requirements are the best paid software specialists in the Netherlands. Volmac's headquarters are in Utrecht, and we have 11 branches throughout the Netherlands.

A permanent and fascinating job in Holland

You'll have all the advantages of being directly employed by Volmac. This means you'll pay Dutch income tax, which at these salary levels is less than British tax. You'll also be coming to live in the Netherlands. If you're a married man, you'll be bringing your wife too. Volmac will help with your removal and contribute towards the cost. We'll give you a company car and generous expenses. What's more, you'll have paid holidays of up to 27 days a year.

RING 01-723 12 77

If you have the necessary knowledge and experience, this is your chance to profit from it. A Volmac executive - Mr. Jan van Wensen - is currently in Holiday Inn Hotel London Marble Arch, George Street, London W1K 6RN, where he'll be pleased to interview you. Ring 01-723 12 77 for further information and to make an appointment. The final step will be a visit to Volmac in the Netherlands, at our expense. Full-scale interviews there will show whether you and Volmac suit each other. You'll be made an offer immediately.

Automation Centre "Volmac" B.V.
P.O. Box 2575, 3500 GN UTRECHT,
The Netherlands
Our London representative is on 01-723 12 77.

VOLMAC

Systems Analysts Software Designers COBOL Programmers Consultant Analysts Systems Designers Project Managers

A chance to spread your wings

Herts, Cheshire & London. £5000-£9000

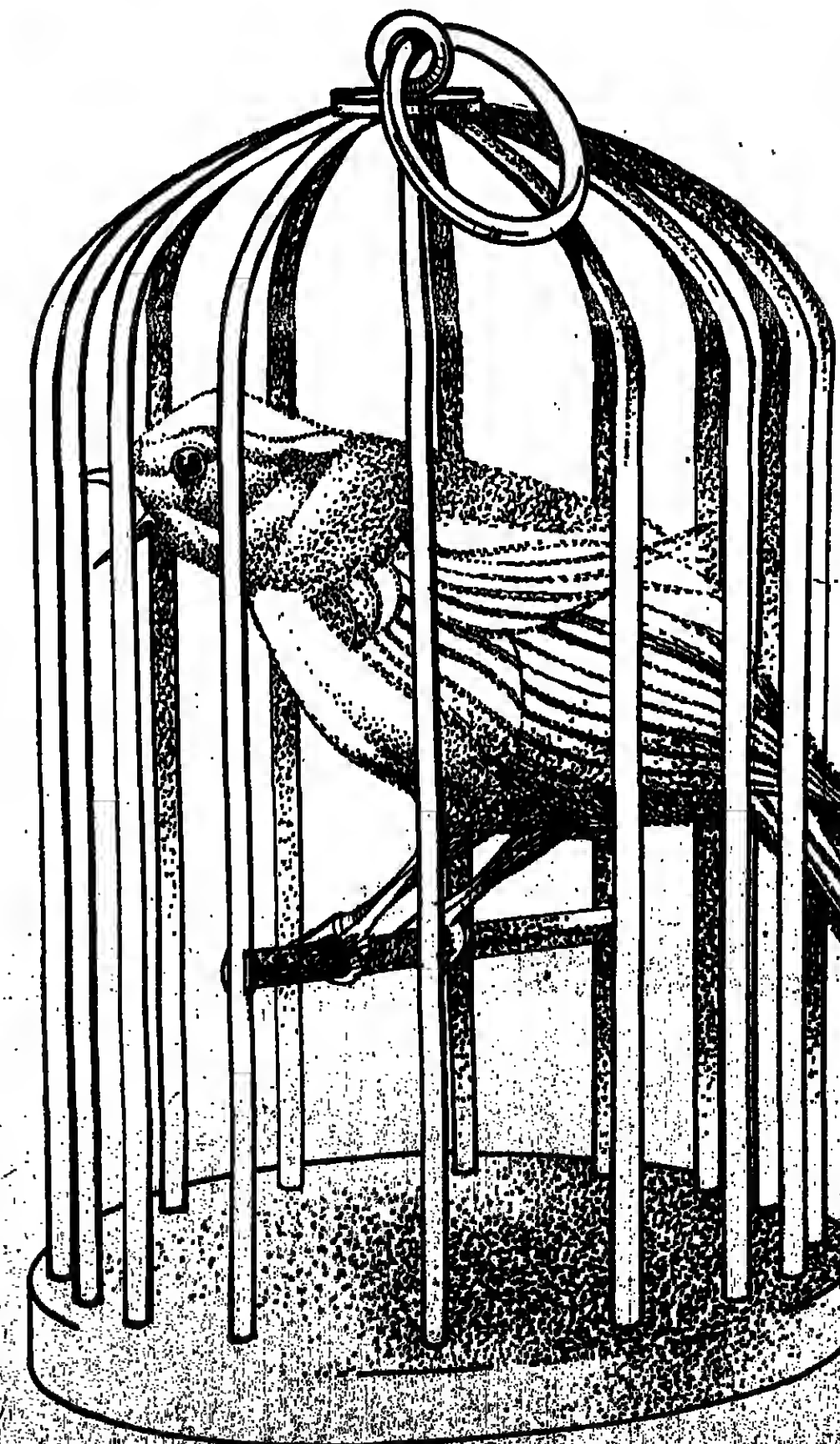
1978 was another extremely successful year for ICL, turnover was up by 22% to over £500m, with over half the business coming from overseas.

This kind of success offers a tremendous challenge to the team who provide our internal company systems world-wide - and our development plan, with a £multi-million budget, means that we now have opportunities that will appeal to ambitious computer professionals who expect rapid career progression as well as job satisfaction.

2900 Training A feature of our development plan is the introduction of a world-wide systems network based on an impressive range of hardware from ICL minis, such as System Ten and the 1500 series, through to very large 2900s. We operate a training plan which will enable you to transfer from 1900 to 2900 easily.

Project Variety & Travel Since ICL operates in 80 countries worldwide, international travel is a possibility as is the chance for longer term overseas assignments. There is also tremendous project variety, with the chance to specialise in systems software, pure systems development or maintenance and user support.

Career Development But perhaps the greatest attraction is the opportunity for career development. Working for a computer manufacturer means that you could make career moves into functions such as marketing, finance, or technical support, or perhaps consultancy with our subsidiary Dataskil, Europe's leading software house.



We have vacancies in Stevenage, Letchworth, Manchester, Kilsgrave and Putney. We would like to hear from you if you have experience in some of the following areas:

Commercial Applications

- ICL 1900 or 2900 COBOL
- GEORGE III VME/B
- IDMS
- Real-time systems
- Production and Manufacturing systems
- Marketing and Finance systems
- Engineering and Spares systems

Systems Software

- Diagnostics
- Construction of VME/B systems
- Large systems design and programming standards
- VME/B Superstructure products and systems programming
- Networking software
- TP systems software and applications
- Filestore control and data-administration

Your action! We will be holding interviews over the next two weeks, so write now giving brief career details to: George Battersby, ICL Recruitment Services, 93/99 Upper Richmond Road, London SW15, or if you require further information telephone him on 01-788 7272 ext. 4179. Please quote reference CW1330.

International Computers

think computers - think ICL

ICL

APPLY TO: Mr. J. van Wensen, Holiday Inn Hotel London Marble Arch, George Street, London W1K 6RN. Tel: 01-723 12 77.

Memorex Europe Limited has the following vacancies:

System 3 Support Specialist

To join the European Technical Support Group based in our European Headquarters in West London.
The successful candidate will have at least four years' experience in an IBM system 3 environment with an in-depth knowledge of the system 3 control program.
The specialist must be able to communicate well with customer personnel at all levels, design staff on Memorex products, and senior management within the Company.
The position offers opportunities to travel throughout Europe and the U.S. and carries an attractive salary and benefits package, and excellent prospects.

Small Systems Instructor

To work at our Engineering Training Centre located in the Heathrow area. The Instructor will join the European Training Group who provide an education programme for the Memorex engineers working at all our European operations.
Suitable candidates will have 3-6 years' practical mini-computing experience, preferably on IBM system 3 or equivalent, 1-2 years' teaching experience would be an added advantage.
A special instructors' compensation programme will apply and benefits include an excellent company pension scheme, free life, assurance and BUPA cover.

Please write or phone for an application form:
Helen Smith, Memorex Europe Limited
730 London Road, Hounslow, Middlesex TW2 1PD, 01-572 7351.

MEMOREX

UNIVERSITY OF NOTTINGHAM
CRIPPS COMPUTING CENTRE

Applications are invited for the posts of

SENIOR SYSTEMS PROGRAMMER

and

INSTALLATION ENGINEER

The University has a linked 1804/1808A configuration, integrated with a packet switched network, comprising two POP11/40 (for data processing and editing) and a Module One (for interactive BASIC), a Fastway POP11/34 (providing on-line access and the special facilities for remote users) and a POP11/34 switching node (providing access to EPSS and links to departmental mini computers). The Centre is also active in participating in the development of a new regional network which will fully interconnect the main computing services of the six midland Universities.

For the first post, experience of either POP11 or 1800 George 3/4 systems is essential. Applicants should normally have a good honours degree or equivalent experience.

For the second post, an experienced engineer with an interest in software is sought to assist in the handling of development problems encountered during the operation of the system. Applicants should have at least HNC, although a degree is preferred, and should also have at least two years' relevant experience.

For both posts the initial salary will be in a single step, i.e. £2,500 p.a. (incl. review), with USS, according to qualifications and experience.

Further particulars and forms of application, returnable not later than 13th April 1979, from Staff Appointments Officer, University of Nottingham, University Park, Nottingham NG7 2RD. Ref. No. 578.

Manager or Team leader?

We are looking for some good Managers.
We know they will be expert at solving problems, pre-empting crises and handling exacting staff and customers.

We want them to STOP doing all those delightful things and concentrate instead on getting to grips with microprocessors.

At Marconi Avionics we are using microprocessors in all our projects: singly, in pairs, clusters, networks and, occasionally, in multitudes.

We will provide the training, but we are looking for some really expert problem solvers who can tackle a large number of one-man or two-man

projects. Not who can just manage but who can really tackle, design and write code and work hands-on with our engineers to get the systems working.

To find out more about this challenging opportunity ring Ian Smith on 01-953 2030, ext. 3787.

Alternatively, please write to H. E. Batchelder, Marconi Avionics Limited, Elstree Way, Borehamwood, Herts. Please quote reference MA 79036.

These posts are open to both men and women.

MARCONI AVIONICS
A GEC-Marconi Electronics Company

Computer Manager

The Public Health Laboratory Service Board invites applications from suitably qualified candidates with enthusiasm and drive for the position of Manager to take charge of a newly formed Data Processing Unit.

The Board provides a microbiology service at 62 laboratories throughout England & Wales, at the Central Laboratory, Colindale Avenue, and from 1 April 1979, at the Laboratory for Applied Microbiology & Research, Porton Down, Wiltshire. A number of computer projects already operate and these are to be brought under centralised control together with future developments. A CTL computer is now being installed at Porton Down.

The Manager will be responsible for planning the development of a coherent, organised service. He/she will be based at Colindale through of first, during the commissioning and programming of the new computer. Much time will be devoted to the unit at Porton Down.

The successful candidate is likely to be a graduate with sound experience of modern computing methods. He/she will be responsible to the Board's Headquarters officers, will work with senior scientific and medical staff of the different units.

The appointment will be under NHS terms and conditions of service with a salary on scale 23, £6855-£9423 plus 1984 London Weighting.

A copy of the job description may be obtained from: Dr. R. A. Bostall, PHLS Board, 61 Colindale Avenue, London NW9 5EQ (Tel. 01-200 1235) to whom applications with full career details and names and addresses of three referees should be sent by 23 April, 1979.

PHLS

Public Health Laboratory Service Board.

Gwent
County Council

COUNTY TREASURER'S DEPARTMENT - COMPUTER SECTION

Gwent is a pleasant county in which to live. There is easy access to the motorways and the high speed rail systems. There are sporting and leisure facilities to suit all tastes from energetic pursuits such as sailing, to walking in pleasant countryside. We have an IBM 370/148 with 3360 disk storage and take pride in being in the forefront of computer development. Plans have been made to replace the existing equipment. Decisions have been taken to extend the present on-line cash recoupling and V.B.U. applications to take us into the 1980's.

Applications are invited for

SYSTEMS ANALYST / PROGRAMMERS

on Grade SO 1/2 (£5,232 p.a.). These people will join existing teams dealing with a wide variety of applications. The main programming languages are PL/I, Assembler and Fortran. Candidates should be suitably qualified and have a minimum of five years computing experience is desirable. Generous assistance will be given towards removal, legal expenses, etc.

Application forms available from the Personnel Officer, County Hall, Cwmbran, Gwent NP44 2XH should be submitted by Thursday, 18th April, 1979.

Opportunities for DATA PROCESSING AND O & M PROFESSIONALS

The Leeds Permanent Building Society is seeking to recruit experienced Data Processing and O & M personnel to join the Management Services team at its Leeds Head Office. A number of new and exciting projects are now being planned and additional staff are required to assist in their development. The project will be concerned with both Branch and Head Office operations, and the latest computer technology and office equipment will be employed.

BUSINESS SYSTEMS DEVELOPMENT: (Ref. 850) Applicants should be SO and O & M Analysts with at least two years experience and who have received some formal training are invited to apply. They will join the Systems and Procedures Department which operates on a basis of multi-disciplined projects. This successful applicant will have the opportunity to gain a wide understanding of all management service techniques, and to relate them directly to the Society's business requirements.

COMPUTER DEVELOPMENT: (Ref. C01) Technical designers and programmers with at least two years experience gained in an IBM installation are invited to apply. The positions offered in the Computer Development Department will provide the technical challenges associated with the sound design and development of advanced computer systems.

The Society offers a progressive salary together with a staff mortgage scheme, pension, life assurance and sickness benefits, subsidised staff restaurant and sports and social facilities. Good promotion prospects are available to the right people.

Interested applicants should write briefly or telephone for an application form, quoting the appropriate reference to: J. Clark AMBIM, Personnel Manager, Leeds Permanent Building Society, The Headrow, Leeds LS1 1NS. Tel: Leeds (0532) 38181 ext. 448.

Enquiries will be treated in the strictest confidence. Employees should be notified of their status.

The Leeds Permanent Building Society
ONE OF THE BIG FIVE

MYRIAD

DO YOU WANT REAL ANALYTICAL INVOLVEMENT?

WATERLOO £6500-£7500

Our client is about to embark on a schedule of development which, based on the newly installed mainframes at their London Data Centre, will provide additional and more technologically advanced computing facilities for user groups.

This creates the need to appoint a Systems Analyst who will, with a team of professionals, undertake the development of a Distribution System. The aim of the project team is to design and implement a system to bring optimum flexibility to users and provide ordering and distribution procedures that will ultimately result in even greater sales efficiency for the company.

The successful candidate for this challenging position will display sound experience in commercial systems design and will be actively seeking the opportunity to gain more depth of analytical involvement and total project responsibility.

In addition to an excellent salary and benefits the company are able to provide real career progression in a stimulating and professionally rewarding environment. Ref: SE1/2903

MYRIAD APPOINTMENTS LIMITED Computer Personnel Consultants
Telephone or write to:- 30 Fleet Street London EC4Y 1AA 01-353 0981 (24 hrs)



OLYMPIC HOLIDAYS LIMITED

DATA PROCESSING MANAGER

Olympic Holidays, Britain's largest tour operator to Greece, require a Data Processing Manager for their London office.

Reporting to the Finance Director, the person appointed will, with the assistance of a small staff, be responsible for the continuing effectiveness of the present data processing department and the future development of services within an expanding organisation.

The company's data processing is carried out on its own DEC PDP11/34 using Basic 4+ and applicants will need to demonstrate their ability to work with this equipment.

Ideally, candidates will have had experience in a computer department, either at managerial or senior level. Commencing salary will be up to £7,500, plus bonus, BUPA membership and travel concessions.

Please apply with brief but adequate details to: W. E. Dyer, Finance Director, Olympic Holidays Limited, 24/28 Queensway, London W2

COMPUTER ENGINEERS

On April 26th, 1979, a recruitment feature highlighting careers within the computer engineering field will be published.

To advertise in this important feature contact:

EDDIE FARRELL
on 01-261 8097

ANALYST/PROGRAMMER with *PLAN & COBOL*

Permanent or contract for immediate start to work with our client project team implementing manufacturing systems, initial 6 month assignment for both London and Glasgow. Gold or R. Cam on 01-385 0000.

FRASER WILLIAMS (LONDON) LTD, 38 Watling Street, London W1P 8PD

Fraser Williams
Computer Consultants

Scientific/Engineering Programs

We are looking for someone to design scientific and engineering programs for our Operations Engineering group based at Heathrow Airport. This group is involved in many key aspects of the airline's current and future activities, and has specialists in aircraft performance, weight and balance, noise and vibration, aircraft evaluation and other related disciplines.

Starting pay is currently under review will be £1777 p.a. (incl. £1777).

The person we are seeking will be responsible for the complete design, implementation and continuing development of programs to support these specialists. He/she will be expected to review all established activities within the group, to assess their suitability for computerisation, and to advise colleagues on computer applications. He/she will have contacts at all levels with other departments including Management Services and Flight Operations.

Applicants should be graduates in Mathematics or Computer Sciences with 4-5 years' experience of designing scientific/engineering computer systems using ALGOL, on an ICL 1906S operating under

Other benefits associated with a major international airline apply, including an index-linked pension scheme, subsidised canteens, extensive sports and social facilities and favorable holiday travel opportunities.

For an application form please telephone 087/CW/20M, or write on a postcard to: Recruitment and Selection, British Airways, PO Box 16, Heathrow Airport - London, Hounslow, Middlesex.

British Airways welcomes applications from suitably qualified registered disabled persons.

British Airways

BUREAU ENGINEER

An experienced person is required to undertake the day to day maintenance of equipment in the Radar Company's Computer Bureau. The equipment comprises of: 8100s 16's, 2 Elliott (8008), 3 Myriad Systems, displays and a Prim Programmer. The post will entail organising the equipment, configuration changes, modifications and the incorporation of new equipment, including interfaces to the new 4070 computer.

The successful candidate (male/female) will be expected to have 2-3 years experience in maintaining DP equipment as well as a good background knowledge of digital computing, machine architecture, principles of machine operation, computer peripherals etc. Finally an ability to liaise with outside organisations with reference to maintenance contracts, repairs etc. will be an advantage.

In addition to a highly competitive salary, a comprehensive range of benefits, including relocation expenses in approved cases, is being offered.

Please apply in writing (quoting reference BW113), giving details of career and experience to date, to Bernard Walsh, Marconi Radar Systems Ltd, Friespost, Chelmsford, CM1 5BR. Tel: Chelmsford (0246) 57411.



Planning and Transportation

Technical Programmers

£3732-£4632 p.a. inclusive

The Technical Computing Group provides an advisory and programming service to the Department. The range of work is very wide and includes road and bridge design, traffic accident analysis, traffic survey analysis, planning applications and highway maintenance monitoring. Database techniques are used in use and it is planned to considerably increase their use following the installation of a 2980 and 2972 under VME/B over the next year. The Department has its own graph plotter and digitiser, and accesses the current ICL 1904S via VDU's.

Applicants (male or female) must have a formal education to at least 'A' level standard, a minimum of 1 year's programming and enjoy dealing with non-computing professionals. Experience in at least two of the following areas: FORTRAN, GEORGE III, Local Government, Civil Engineering, IDMS, information systems or database would be an advantage.

Assistance will be given with the expenses incurred in moving house in accordance with the Authority's Scheme.

Application forms can be obtained from the Director of Planning and Transportation, Trent Bridge House, Fox Road, West Bridgford, Nottingham, telephone Nottingham (0802) 868555, ext. 366. If you wish to discuss the posts informally, please speak to Dave Alsworth on ext. 392. Closing date April 9th, 1979.

Nottinghamshire County Council
County Hall West Bridgford
Nottingham NG2 1RA

Systems Manager

c.£10,000 - Reading

Thames Water, which manages all water services for some 12 million people, is the largest operation of its kind in the world. It makes extensive use of the latest computer technology and its Reading establishment is currently replacing existing ICL 1900 systems with a distributed processing network. This will comprise a large mainframe computer with linked processors at a number of locations to provide both conversational and bulk transmission services.

A Systems Manager is now to be appointed to be responsible for leading a team of about 20 systems analysts and programmers on many applications, with the major effort on financial systems. Responsibilities also cover identification of system needs, the creation of development schedules and resource plans, and the ability to negotiate these with a variety of user groups.

He/she will be conversant with the needs related to personnel development including the recruitment, training and review of systems and programming staff. Generally, the Systems Manager will work in close liaison with the head of Computing providing regular reports on projects and resources in addition to identifying and selecting new technology to support our overall computer strategy.

This appointment calls for a man or woman, aged at least 30, with a good degree and a proven ability in managing systems conversion project. The applicant will have at least 3 years' experience in management, have successfully developed and implemented a number of large computer systems (some including remote computer networks) and possess knowledge of database and communications software.

Salary will be within the range £9,645 - £10,371 plus an excellent benefits package. If the challenge of managing in a major data processing environment interests you, write or telephone for an application form to Assistant Director (Personnel-Staff), Thames Water Authority, New River Head, Rosebery Avenue, London, EC1R 4TP. Telephone: 01-837 3300 Ext. 2024.

Closing date for receipt of applications: 17th April 1979.

Thames Water

C E MANAGER

LONDON - c £7000 + Car

We seek an experienced Computer Maintenance Engineer to manage our UK maintenance operation. The successful applicant will have wide experience of computer equipment and will be able to demonstrate managerial ability.

Remuneration package includes generous fringe benefits. Periodic visits to our Toronto based research department will arise.

This is an exceptional opportunity for the right man to join our fast expanding company.

Please apply with resume to: The Engineering Manager, GEAC Computers Limited, 80 Stokes Croft, Bristol BS1 3QY. (or call reversing charges 0272 425811).

COMPUTER SALES EXECUTIVE

£12K BASE + VOLVO

This Dynamic American Company has just opened two new Sales Regions in U.K. and Europe and is looking for young Salesmen with Management potential to spearhead the attack in these territories.

Whilst experience of IBM mainframe (or PCM equipment) would be a distinct advantage candidate with a successful record in the computer field would be considered.

TOP SALARY - TOP COMMISSION - TOP CONDITIONS

Phone VERA for an interview THIS WEEK.

KEY COMPUTER PERSONNEL
01-949 5851

GREATER MANCHESTER

SYSTEMS ANALYST to £7000
ICL 1900 Installation based in South Manchester. Develop an on-line order entry system. Should have a COBOL programming background.

ANALYST/PROGRAMMER £5500+ Car
ICL 2904 installation. Ideally should have both programming and systems experience, but would consider person with 3 years' COBOL experience. On-line knowledge helpful.

CONTRACT PROGRAMMERS & ANALYSTS

to £350 p.w.
Greater Manchester - RPG2 Programmer/Mark IV Programmers/MUMPS Programmers/Business Systems Analysts (IBM/UNIVAC/HONEYWELL). Overseas - Europe - IBM Programmers (COBOL/RPG2/PL1). Saudi Arabia - 4 x IBM COBOL Analyst/Programmers (tax-free salary, free accommodation, etc.).

To register for these and many other vacancies, please contact Alan Brown (Computer Recruitment Consultants), SENIOR APPOINTMENTS COMPANY, 2nd Floor, Coronation House, Arndale Centre, Market Street, Manchester. Tel. 061-832 4383.

MYRIAD TECHNICAL AUTHORS FOR ADVANCED SYSTEMS GERMANY (MUNICH) AND ENGLAND (N.W. SURREY)

THE JOB

To assist with the implementation of unique systems, the successful applicants will be responsible for the software manuals and all related documentation for specific projects. This will entail liaison between the programming groups and user departments to ensure complete understanding of the system functions.

SALARY

As we are seeking a range of personnel for projects in Germany and England, the salaries will vary according to experience and location but should not prove a problem to persons wishing to join the company. The positions in Germany include full removal expenses, a disturbance allowance, 5 weeks' holiday plus 14 public holidays and a return trip each year.

The modern offices in England are located in the attractive countryside of Surrey with road and rail links providing easy access to the West End of London.

EXPERIENCE

These positions will be filled by candidates displaying the ability to produce technical documents in a clear and concise manner to a predefined specification. Previous programming experience, preferably assembler, is essential and a qualification in electrical engineering or a scientific subject would be a distinct advantage.

COMPANY

Our client is a highly profitable and successful business, expanding rapidly in Great Britain and overseas, specialising in the production of engineering/scientific applications on a wide variety of micro, mini and mainframe equipment. The bespoke systems often incorporate advanced technology and cover air, land and sea projects. Services offered range from operational research and management consultancy through project appraisal to final implementation.

MYRIAD APPOINTMENTS LIMITED Computer Personnel Consultants
Telephone or write to:- 30 Fleet Street London EC4Y 1AA 01-353 0981 (24 hrs)

Ref: S1/2803

SYSTEM ANALYST — PROGRAMMER (c £6,000) CENTRAL BIRMINGHAM

Candidates with a minimum of two years' experience of COBOL or Fortran are invited to apply for the above position within a large market research company. Flexible working hours, interesting On-Line Development, applications together with a small friendly D.P. team provides the ideal environment for career progression.

For further information please telephone or write to:

Mr. M. E. White
Staffs M.R. Company Limited
Gloster House, Small Brook
Queensway, Birmingham. Tel. 021-643 5922

Programmer/ Analyst

Marlow

The Computer Services Department, based in Marlow, operates an ICL 2904 with 32 KES, OOE, VOU and a network of intelligent terminals are being installed for the major companies operating within the Lovell Construction Group.

The Computer Services Department plays a vital part in the operation of the Group, and we now wish to strengthen our small development team.

We are looking for a person with at least 18 months' programming and systems experience in COBOL and 1500 BTL although training for the latter can be arranged. The successful applicant must be capable of working on their own and preferably have some experience of accounting systems.

The salary will attract the person with suitable training and experience who now wants to join a developing organisation within an expanding group. We offer pension/life assurance and this year's holidays will be honoured.

Please apply by writing to or telephoning for further information.

L. Bristol
Computer Manager
Lovell Construction
35 High Street
Marlow, Bucks.
Tel: Marlow 6187

Lovell

International activities

Logica has always placed strong emphasis on international activity. Over half of our work is outside the UK. Currently we are particularly expanding in the Middle East.

Our activities there involve computerisation feasibility studies, system specifications, equipment selection and software implementation. The majority of these projects involve on-line systems.

We have immediate requirements at two levels.

Systems Designers £8000 - £9000

We are seeking commercially oriented systems designers. Ideally they should have a total of 7-8 years of experience of which the last four should have been spent in design work. They should have on-line and programming experience and must be able to demonstrate a successful record of systems implementation. In addition IDMS experience would be useful.

Programmers £5000 - £7500

We are seeking experienced programmers with 3-7 years of experience including development of on-line systems.

We are particularly interested in two backgrounds
■ mainframe experience preferably including use of large ICL 2900 under VME/B or VME/K
■ minicomputer experience preferably including use of DEC PDP/11 under RSTS or RSX

Logica

Resilience flexibility and ability to work without continuous outside support are important personal qualities needed in addition to technical excellence.

All staff will be employed on normal London based employment contracts. Although some work will be in London they will be expected to be willing and able to spend both long and short periods in the Middle East. Generous expenses and conditions will be provided for the duration of such assignments.

It is the intention of our Middle East Operation to aggressively seek out major and technically advanced system development opportunities. These posts will give an exceptional opportunity to join a rapidly expanding division of Logica at an early stage.

For further information call Julia Roth on 01-637 9111 or write, quoting reference ME06 to Logica, FREEPOST 21, London W1E 4JZ.

An exciting challenge for a young ANALYST/PROGRAMMER System 34 c. £6,000

We are about to take delivery of a new IBM System 34 and we need a young Analyst/Programmer, who would welcome the challenge of developing systems and programs for this installation, which will have 7 on-line VDU's and 64 Mbytes of disk. If you have programming experience using IBM systems with, if possible, a bias towards manufacturing control and data collection techniques, then this could be the opportunity for you. A working knowledge of RPG II would be an additional advantage.

As Europe's leading manufacturer of Automatic Test Equipment, Membrain can offer you outstanding opportunities to develop a

career in one of the latest growing areas of high technology. We have grown from a Company of four employees to one with a turnover of around £1m in 8 years. You'll be working in one of the most beautiful parts of the South Coast, close to Bournemouth, the New Forest and Dorset countryside. There's an excellent starting salary, a profit-sharing bonus scheme, four weeks annual paid holiday and full relocation costs, where appropriate.

For more information, telephone Steve Thurlow on Ferndown (0202) 893535, or write with details of your career and qualifications.

MEMBRAN
European leaders in Automatic Testing

A Schlumberger Company
MEMBRAN LIMITED
Ferndown Industrial Estate,
Wimborne, Dorset, England.
Tel: Ferndown (0202) 893535

Advanced Systems ASI

MAJOR OPPORTUNITY IN TRAINING

Advanced Systems

We are an International Company with over 9 years' success in marketing a multi-media library of courses based upon video and audio and text. Worldwide we have over 6,500 customers. Our courses cover a wide range of skills within Data Processing, Management and Production Control. Major expansion in the U.K. and Europe demand additional staff.

Education Consultant c. £8000 + car

Candidates will have several years' experience in E.O.P. and be able to demonstrate an active interest in education and training. Knowledge of IBM systems and of multi-media training packages would be an advantage. The job will involve working directly with our customers in the South of England in an advisory and consulting role and preparing detailed career development programs.

This position provides a rare opportunity to join a company which is the market leader in its field with over 500 clients in the U.K. and Europe, and as a result of its rapid growth rates offers exciting career advancement opportunities worldwide.

TELEPHONE John Kirkham, General Manager, today on 01-504 8882 or write enclosing brief career details to:
ADVANCED SYSTEMS INC.
1 Knightsbridge Green, London SW1X 7QA

WE'RE REALLY GOING PLACES! ARE YOU? PROGRAMMERS OPERATORS VFP Consultants 01-481 3288

THE UNIVERSITY OF LEEDS Department of Chemical Engineering REAL-TIME DATA ACQUISITION AND CONTROL

Applications are invited from suitably qualified candidates for the temporary post of:

RESEARCH OFFICER

In the above Department, the Department is committed to the continued development of computer based methods for real-time data acquisition and control. A good deal of the activities up to now have been on microcomputers using computer equipment from Data General, Digital Equipment and IBM but it is anticipated that microprocessors and systems will feature centrally in the future expansion. The appointment will be for a period of 18 months, from 1st October, 1979, for a fixed period of three years.

Salary will be commensurate with the position and experience. The University, Leeds LS2 9JT, is a research institution. The University is a research institution. The University is a research institution.

UNIVERSITY OF HONG KONG Systems Analysts RECORDS OFFICER/ SENIOR RECORDS OFFICER

Applications are invited from persons with suitable qualifications and experience for appointment to a post which has been created in preparation for the commencement of several undergraduate courses in 1980. The appointee will be responsible for the design of computer systems to be used in the Dental Teaching Hospital with first priority being given to the implementation of a patient record system from the opening of the teaching hospital in September 1980.

Applicants should have extensive experience in systems analysis and for appointment at the senior level a minimum of 10 years' relevant experience will be required.

The annual (superannuable) salary will be within the range: Records Officer HK\$18,220 + \$4,260 = HK\$22,480; Senior Records Officer HK\$19,700 + \$4,260 = HK\$23,960.

Starting salary will depend upon qualifications and experience. The appointee will be required to commence duties on 1st September 1980. At current rates, salaries will not exceed 15% of gross income. Housing and a grant of 75% of actual education allowances, long leave and medical benefits are provided.

Further particulars and application forms may be obtained from the Association of Commonwealth Universities (A.C.U.), 25, Bedford Square, London WC1N 3PP, or the Academic Secretary (Recruitment), University of Hong Kong, Hong Kong. Closing date for applications is 30 April 1979.

UNIVERSITY OF LONDON Computing Centre

Applications are invited for the post of:

SYSTEMS PROGRAMMER

In the Computing Centre at the University.

The Centre provides a service to the University through its computer systems. The University is a research institution. The University is a research institution.

COURSES

SCHOOL OF ELECTRONIC SYSTEM DESIGN

A centre for microprocessor technology which is recognised for training and consultancy under the Department of Industry Microprocessor Applications Project.

One week residential course for engineers who need training in microprocessors and their applications - 1979.

MICROPROCESSORS AND THEIR APPLICATION AS MICROCOMPUTERS

April 2nd-8th
June 11th-15th
November 5th-9th

Organisation, software and hardware of 8080, 8085, Z80, 8086 and 8088. Slice microprocessor families.

MICROPROCESSORS AND THEIR ON-LINE APPLICATION

May 20th-28th
November 28th-December 1st

Practical digital real-time control techniques including basic of microprocessors, on-line control algorithms, digital filters, Kalman filters, hardware and software aspects of microprocessor realisation.

Design study using 8080/85.

Course to be introduced later this year.

18-bit Microprocessors, Microprocessors and their peripherals.

A programmer's introduction to Microprocessor Hardware 3.

COURSES CAN BE REARRANGED TO MEET A COMPANY'S REQUIREMENTS, EITHER AT GRANTFIELD OR IN LONDON FOR GROUPS UP TO 20.

For information, contact: Regional Technical Director, Regional Office of Technology, Grantfield, Bedfordshire, MK43 0JH. Tel: 0525 260111. Fax: 0525 260112.

Programmer

N.I. to £5,700 p.a.

At the British Standards Institution we are responsible for setting, publishing and selling the standards which are so important to British industry and the consumer alike.

We are looking for a computer programmer for the writing of new programs and the modification, maintenance and debugging of existing software for a wide range of commercial systems.

Although MUMPS experience is not essential, the successful candidate will need to become familiar with the operating system and hardware (we are upgrading our PDP 11/45 to an 11/70) as he or she will be responsible for the supervision of operating staff.

Ours is a small department consisting of a DPM and 4 others, so we need a person who can deal direct with our departments, is prepared to work shifts and 'have a go' at solving the varied problems which can arise during the day-to-day running of the DIT function.

Applicants should contact David Bennett, Personnel Officer, at the address below:

BSI Personnel Department
British Standards Institution
389 Penfold Road
London N1 9ND
Tel: 837 8801.

British Standards Institution

COMPUTER SUPPLIES REPRESENTATIVE

If you are an experienced professional sales representative with a good knowledge of the computer supplies industry this opportunity could be your next career development step.

As a sales representative with 3 Counties Business Supplies you would be directly responsible for the sale of computer labels and ribbons throughout the South East of England and you would play a significant part in the development of a small company with the security of H. J. Chapman & Co. Ltd., the Nationwide Stationery Service, behind it. Your ideas and recommendations would be welcomed and your ability recognised and developed.

A high basic salary plus commission is payable on car and expenses provided.

The company offers a Group Pension Scheme, Medical Insurance and four weeks' Annual Holiday.

For further details and application form, telephone or write to Val Spry - Ledbury 2488/7.

Three Counties Business Supplies Limited

Ledbury Park, Ledbury, Herefordshire, GL6 7JH

Tel: 0521-2488/7

MID GLAMORGAN COUNTY COUNCIL County Treasurer's Department

SYSTEMS ANALYST £4245-£5568

PROGRAMMER £3279-£4632

(Salaries quoted include supplements but not a Phase 4 settlement)

The Authority is soon to take delivery of an ICL 2972 computer and staff are required to join project teams actively working on the transfer of systems to this machine.

For the post of Systems Analyst, a minimum of one year's system experience is desirable and applicants must hold a suitable qualification. For the post of Programmer, applicants should have some COBOL experience although applications will be considered from graduates or other qualified persons with a view to training as programmers.

Commencing salaries will depend on qualifications and experience.

Benefits of working with the Authority include:—
* Located in the centre of Cardiff, easy access to shops and parks.
* Flexible working hours.
* Incremental scheme of progression.
* Experience of 2900 computers.
* Contributory pension scheme.

The County Council's scheme for the payment of lodging and disturbance allowances will apply.
* Subsidised canteen facilities.
* National conditions of service.

Application forms (to be returned by 9.4.79) are obtainable from the County Treasurer, Mid Glamorgan County Council, County Hall, Cardiff.

CANVASSING WILL DISQUALIFY.

Contract Requirements

IBM MVS SYSTEMS PROG.
PDP MUMPS
PDP BASIC + 2
PDP BASIC
IBM OS FL/1 + IMS
VENTEK DATA SHARE
ICL 1900 PLAN

Call Richard or Suzy on 01-491 2706

Software Division
Staff Services Division of BOC
a member of Computer PPS

Real Time Software

The Westinghouse Brake and Signal Company has built up a worldwide reputation for the quality of its wide range of electrical, electronic and mechanical products. Since our foundation in 1961, our success has not only been built on hard work but our ability to accept and implement new methods and ideas.

SOFTWARE PROFESSIONALS

We are looking for software professionals, male or female, at all levels to work on sophisticated real-time systems for railway control and telecom projects, both in a development environment and towards actual installations.

We are also anxious to hear from programmers and graduates who wish to gain experience of mini and micro-computer based industrial real-time systems.

Practical experience of systems software using PDP 11s, MICROS HPs, is desirable and knowledge of either RSX 11M; RTL 12; CORAL; MACRO 11; INTEL; RTL 2 or Assembler would be advantageous.

We can offer a sound, progressive career within rapidly increasing rates of activity, together with opportunities for overseas travel.

A full relocation package is available in appropriate cases.

Find out for yourself what we can offer. Write today with career details to Miss F. T. Cox, Personnel Officer, Telephone Chippingham 0248 9414 Ext. 700 (reverse charges).

KEEP AHEAD WITH THE LEADERS WESTINGHOUSE

Brake and Signal Co Ltd Chippingham Wilt

COME AND SEE US AT COMPUTER MARKET

on the 3rd, 4th and 5th APRIL

at the BLOOMSBURY GARDENS HOTEL

LONDON WC1N 3AA

(Close to Russell Square Tube)

01995 3883
(01958 6138)
(Evenings)

Project Leader for Market Leader

New Management Post in Hampshire

In our Computer Development Department at the company's head office where we use a wide range of hardware from mainframe down to microcomputer equipment. The Project Leader, who reports directly to the Computer Development Manager, will be involved in all aspects of computer development from feasibility study through to implementation and subsequent systems amendment. Responsibilities will include team leading of both internal and external staff. You will also have the opportunity to make a contribution to the course of future computer development within the company.

You should have experience of systems analysis, design and implementation for at least one major system. The ability to communicate effectively and a sound knowledge of programming IBM 360/370 preferred.

All the usual fringe benefits of a substantial company apply, including relocation assistance if appropriate. BOCM Silcock is part of Unilever and is the leading firm in animal feed business in the United Kingdom with other diversified activities. The company's headquarters are at Basingstoke, which is within easy reach of London, yet with the advantages of a rural location and with easy access to the South Coast.

Candidates interested in joining us should send brief, but comprehensive personal and career details (including salary) to:

Alan Conter,
Staff Personnel Manager,
BOCM Silcock Ltd.,
Basing View,
Basingstoke, Hampshire.
Tel: Basingstoke 29211, ext. 378.

BOCM SILCOCK

THE UNIVERSITY OF LANCASTER

COMPUTER SERVICES DEPARTMENT

SYSTEMS PROGRAMMER

The department is to recruit an ICL 2940 in June 1979 to the newly created post of Systems Programmer. The Systems Programmer will develop, test and maintain programs which effect a connection to the existing mainframe computer system. The successful candidate will be responsible for the design, development, testing and maintenance of large operating systems and/or communications programs. He will be expected to produce a high standard of work, to be able to work independently and to be able to communicate effectively with colleagues.

Applicants should send their curriculum vitae, together with details of their experience, to the Personnel Officer, University of Lancaster, Bailrigg, Lancaster LA1 4YW.

Applicants should be able to demonstrate a high standard of work, to be able to work independently and to be able to communicate effectively with colleagues.

The successful candidate will be responsible for the design, development, testing and maintenance of large operating systems and/or communications programs. He will be expected to produce a high standard of work, to be able to work independently and to be able to communicate effectively with colleagues.

Applicants should send their curriculum vitae, together with details of their experience, to the Personnel Officer, University of Lancaster, Bailrigg, Lancaster LA1 4YW.

Applicants should be able to demonstrate a high standard of work, to be able to work independently and to be able to communicate effectively with colleagues.

The successful candidate will be responsible for the design, development, testing and maintenance of large operating systems and/or communications programs. He will be expected to produce a high standard of work, to be able to work independently and to be able to communicate effectively with colleagues.

Applicants should send their curriculum vitae, together with details of their experience, to the Personnel Officer, University of Lancaster, Bailrigg, Lancaster LA1 4YW.

Applicants should be able to demonstrate a high standard of work, to be able to work independently and to be able to communicate effectively with colleagues.

MIDLAND AREA SERVICE MANAGER

THE COMPANY
KSL is part of the British owned Kade International group of companies and has been a market leader in the supply and service of data entry peripherals for over ten years now.

THE AREA
The applicant located to commute to the Birmingham/Coventry area.

THE JOB
To manage a team of Field Service Engineers in the day-to-day running of the service operation.

THE CANDIDATE
1) Should be between 25-40 years of age, ideally have an appropriate qualification in electronics, though not essential, and have worked on computers and peripheral equipment, including key-to-disc systems, terminals, line printers, etc. Similarly, management experience in an electronics-based industry will be considered.

2) Should be able to uphold a demanding position and make similar demands and demands of the staff.

THE REWARD
A salary commensurate with the applicant's qualifications and experience will be negotiated, in addition a company car will be available.

If you have the qualities to fill this position, please write to: Mr. C. M. Marlow, Kade Services Limited, Station Road, Calne, Wiltshire, Phone 0249 613771.

CONTRACTORS
(or those considering contracting)

PDP11 PROJECTS

Banking
Order Processing
Process Control
Industrial Automation
General Accounting

If you have sound commercial, technical or scientific experience on any of the following operating systems or languages, register now for current and forthcoming contracts.

RT/11 — RSX 11M (or D) — RSTS/E
MACRO II — BASIC+ — RTL/2 — CORAL — AIMS — RPL

We require high-calibre Programmers, Analysts and Project Leaders/Managers for short and long term assignments both in the U.K. and Europe.

We set a high standard for our PDP Specialist Contractors and pay top rates.

Send your C.V. immediately or ring J. N. Fort for full details or advice on contracting.

P.S. (We also have numerous requirements for IBM, ICL and Univac COBOL Programmers).

REF: 539/1

HUTTON EXECUTIVE SELECTION LTD.
HUTTON HOUSE,
HUTTON STREET, LONDON EC4Y 8HP.

TELEPHONE: 01-353 7141 (24 HOURS)

Hutton
SPECIALIST RECRUITMENT CONSULTANTS

INTERNATIONAL BANKING
LONDON-BASED WITH OCCASIONAL EUROPEAN TRAVEL

SENIOR ANALYST/ PROGRAMMER

CIRCA £8,250 p.a.

PLUS AN EXCELLENT PACKAGE OF BENEFITS INCLUDING SUBSIDISED MORTGAGE, NON-CONTRIBUTORY PENSION, FREE LIFE ASSURANCE, FREE LUNCHES, PERSONAL LOANS, ETC.

PROJECT MANAGEMENT RESPONSIBILITY
THE ABILITY TO "START UP" PROJECTS FROM FEASIBILITY

Our Clients are one of the largest International Banking Groups worldwide. On-going development of their DEC PDP11 based Real Time Banking Systems has lead to this excellent career opportunity.

Candidates should have experience of starting up small projects from feasibility stage and managing them through to implementation. The ability to interface well with the user departments is important as is the ability to manage perhaps two or three small projects simultaneously. Experience in a Banking or Financial environment, although not a prerequisite, would be an advantage.

THIS IS AN EXCELLENT OPPORTUNITY AND FURTHER DETAILS MAY BE OBTAINED BY CONTACTING BOB BOWER, THE ADVISING DIRECTOR AT THE TELEPHONE NUMBER BELOW.

Ref: 539/2

HUTTON EXECUTIVE SELECTION LTD.
HUTTON HOUSE,
HUTTON STREET, LONDON EC4Y 8HP.

TELEPHONE: 01-353 7141 (24 HOURS)

Hutton
SPECIALIST RECRUITMENT CONSULTANTS

SYSTEMS ANALYSTS AND PROGRAMMERS

Holland

AI NEG.

Our clients, an expanding software/services organisation, requires Analysts and Programmers with experience of COBOL/PL1 and IMS to develop a variety of database applications on IBM Mainframe machines. Initial interviews will be held in London during April.

Ref: 13/1

TECHNICAL ANALYST/PROGRAMMERS London based £7,000+

Our Clients, a consultancy in advanced software on minis and micros, requires Analyst/Programmers of 3 years + technical programming, in Assembler or machine code. The company offer excellent opportunities for ambitious professionals to develop applications at the forefront of computer technology.

Ref: 13/2

ANALYSTS AND PROGRAMMERS London to £8,500

An international insurance company seeks D.P. professionals to develop insurance/financial applications. Ideally programmers should have 2+ years' experience of COBOL/ASSEMBLER under DOS/VS with CICS. The Analyst will be expected to have a minimum of 3 years' D.P. experience.

Ref: 13/3

PROJECT LEADERS/ PROGRAMMERS

Essex

to £8,000

Our clients, a manufacturing organisation, has recently installed a Honeywell 64 supporting On-Line and batch Systems. They urgently require all levels of D.P. staff from Programmers with 9 months' COBOL experience to Analyst/Project Leaders to develop commercial/manufacturing Systems.

Ref: 13/4

ENGINEERING SUPPORT STAFF

London

to £6,000+

Our Client, a leading Computer Services Organisation, urgently requires ambitious mainframe programmers with an engineering/scientific background and knowledge of FORTRAN, to provide technical support and advice to clients using their packages/bureau services in both time sharing and batch modes.

Ref: 13/5

TRAINEE TECHNICAL EDITORS

Middx.

to £4,000

A leading computer manufacturer offers unusual opportunities for language graduates to develop and enhance a wide range of technical and sales literature using word processing techniques. Full training will be provided for the successful candidates.

Ref: 13/6

IBM ENGINEER to £12,000+ Tax Free

Bahrain

An international services organisation urgently seeks an experienced hardware engineer to provide support facilities to their clients, on IBM compatible equipment.

For the successful candidate, full training will be provided and the company offer an excellent remuneration package including free accommodation, five weeks leave, company car and bonus schemes.

Ref: 13/7

ANALYST/PROGRAMMERS London to £8,000

Our Client, an expanding U.K. Software House, offers excellent opportunities for COBOL Programmers with a minimum of 2 years' experience and some systems analysis to develop a variety of commercial and financial applications. Preference will be given to candidates with some experience on Burroughs machines, and the ability to work on their own initiative.

Ref: 13/8

INFORMATIX UNITED KINGDOM AND OVERSEAS INDEX

Haven Informatix Limited

24 Grays Inn Road London WC1X 8HR Telephone 01-831 6055 Telex 299539 HAVEN G



Assembler Programmer Up to £5000 p.a. Chester

Our Systems Implementation and Support Group, which is responsible for the implementation of new systems and the maintenance of existing systems, has vacancies for programmers with at least 18 months' experience of I.B.M. Assembler preferably under O.S. We can offer a competitive salary based on experience, an attractive relocation package and a flexible working hours scheme which allows compensatory days off to be taken in lieu of excess hours.

Application forms are obtainable from:
Systems Control Section
Computing Services Division
Cheshire County Council
County Hall, Chester
or ring Sue Wade on Chester 802138.

FREELANCE DATAPoint ANALYST/ PROGRAMMER

Wanted for development work, minimum 4 months in Swindon. 8800s, 5600s, ARC Network.

Ring Allan Martin

Raychem
0793-28171

FORTRAN

FOR THE BEST JOBS IN THE SCIENTIFIC
AND
TECHNICAL COMPUTING FIELD —

CONTACT US NOW

As specialist agents in the Engineering, Scientific and Technical industry, we now deal with over 4,000 Companies throughout the U.K. There is an urgent demand from this industry for experienced Fortran programmers with Fortran experience, jobs from £2,500 to £8,000 p.a. all areas. Phone us now for a free leaflet containing details of our services.

Capital Appointments, 28 Wimpole Street, London, W1P 8PU
Telephone: 01-637 5591 (day) — 01-635 9558 (even.)

NCR OPERATOR

CITY

to £5000 plus benefits

Bahco Espanol en Londres S.A. operate twin real-time NCR 8200s, planned to give an on-line enquiry and data entry service to the Bank's five British branches. Further development includes Management Information systems using database techniques.

A minimum of one year's experience on the NCR B1 operating system, plus the enthusiasm to get involved with practical expansion plans, are the main criteria for this two shift position.

Remuneration includes bonus and shift allowance. Additional benefits are:

FREE pension and life assurance, L.V.'s etc.

If you want to make your mark in a growing installation, contact Lea King or Sylvia Lyons up to 8.00 p.m.

Modern Computer Services Limited,

FREEPOST London WC2N 5BR. 01-639 3351.

Freelance Contracts MODEM Permanent Positions Consultants in Data Processing

WE'RE REALLY
GOING PLACES!
ARE YOU?

PROGRAMMERS
OPERATORS
CONSULTANTS
IN DATA PROCESSING

MANAGEMENT APPOINTMENTS LTD.
Greater Specialists and Consultants for
D.P. MANAGERS, SYSTEMS ANALYSTS,
PROGRAMMERS AND
OPERATORS

28 Wimpole Street, London W1P 8PU
Telephone: 01-637 5591 (day) — 01-635 9558 (even.)

PORTSMOUTH POLYTECHNIC
Computing Centre

Senior Systems Programmer

Post 772

Salary up to £6,500

The centre seeks to recruit a person to lead a small enthusiastic systems team engaged in a wide variety of systems design and maintenance projects. The main user service is supplied by an ICL 2980 mainframe running currently under VME/B together with an ICL 2904 machine using MINIMAC and a switchable terminal network is now being connected in order to expand the user service. Additional commitments of the team include work on a POP11/40 using RSX/M and some microprocessor research applications in association with academic staff. Applicants should preferably be graduates with some considerable experience on the new range of ICL machines, although these conditions are not exclusive.

Application forms are available from: Staff Office, Portsmouth Polytechnic, Alexandra House, Museum Road, Portsmouth; or by telephoning Portsmouth 27681, ext. 317, and returned as soon as possible.

BUSINESS SYSTEMS ANALYST

Required for an established fast growing subsidiary of a large American Corporation. Essential requirements are for a good knowledge of Basic or similar programming language, a knowledge of the Scandinavian market and the ability to think on your feet and be prepared to travel. The salary will be commensurate with experience, plus company car + bonus.

Please telephone Mr. B. Moore 01-635 9558 for an application form.

IBM ANALYST PROGRAMMERS OPERATORS

**£5,000-£8,000
N.W.-KENT/HERTS.**

We have two world-wide manufacturing clients who have requested us to aid in the recruitment of a team of DP professionals. Their configurations consist of IBM 370/158 under DOS/VS, MVS, OS/VS1/2 and there is a great deal of development and design of new systems planned within both companies. In addition to the generous remuneration in the scales above, there are many further attractive benefits.

For information on any of the above vacancies or for enquiries regarding future Contract or Permanent positions:

Please contact Alan Brooker for further details on: **01-637-5001**

CONTRACTS U.K. AND OVERSEAS

LONDON—
LONDON—
HOME COUNTIES—
HOLLAND—
KUWAIT

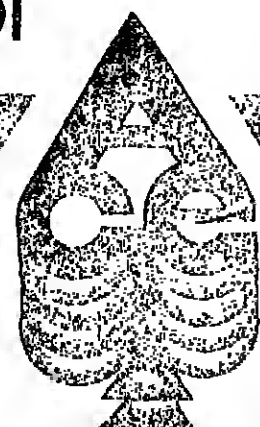
ICL 1900 Cobol GII/III Programmers
ICL 2903/4 Cobol Programmers
Singer 1500 Assembler Programmers
ICL 2960 SCL Programmers
ICL 1900 Cobol GII Programmers

The above are just a few examples of contracts most of which are immediate starts, that we have currently on our register. We have many, many more, so if you are currently a CONTRACT PROGRAMMER or ANALYST, or are at present in permanent employ, but are considering CONTRACT work, please do not hesitate to contact us immediately.

Accord Computer Efficiency LTD

UK Office
Portland House
4 Graat Portland Street
London W1N 5AA
Tel: 01-637-5001 01-580-3754
Telex 261334 ACE UK

European Office
Sarphatistraat 30
1018GL Amsterdam
Tel: 020 264664/264082
Telex 10430 ACEN NL



Data Communications

ADVANCED NETWORK EQUIPMENT
seeks outstanding long-term relation-
for satisfying long-term communica-
ship. I have faultless integrated design
tions, wonderfully control features. I
and unrivalled control features. I
will provide possible five figure in-
come and car. Write or call

INTERTEL communications equipment is probably the most advanced available anywhere for modems, and network control. An integrated range of devices, meets user needs from small single computer terminal systems to large complex networks with many distributed processors. No other products offer such powerful diagnostic and control facilities from a single site.

INTERTEL equipment is marketed in the UK by Data Logic's Communications Products Division. User reaction is enthusiastic and sales are rising fast. This is why we need experienced and energetic Sales Executives.

**Data
Logic**

to develop the market further. Candidates should have experience of selling or supporting the sales of relevant data communications or terminal products. They must be knowledgeable about the rapidly changing field of data communications, highly self-sufficient, and mobile.

We offer an excellent basic salary together with commission which should take annual earnings to over £12,000. A car and competitive benefits will be provided.

Write or telephone, quoting reference CP/02: Kathy Martin, Data Logic Limited, 29 Marylebone Road, London NW1. Tel: 01-486 7288.

SOUTH-WEST
THAMES REGIONAL
HEALTH AUTHORITY

INSTALLATION MANAGER

SALARY SCALE 19
£8,448
(Including
London Weighting)

New post to monitor effective
operations of all Regional Com-
puter applications to:

Recruitment Officer
Computer Centre
Spring Field Hospital
Glen Burnie Road
Teddington, TW17

PROGRAMMERS FOR WEST GERMANY

Long-term contracts due to commence in May/June
1979.

ASSEMBLER/ATLAS EXPERIENCE. MICRO-
PROCESSOR APPLICATIONS.

Submit your particulars to:

Technic Recruitment Services Limited, 3
Fairfield Avenue, Staines, Middlesex TW18
4AB; or Telephone: STAINES 61337 for Appli-
cation Form.

COMPUTER SYSTEMS MANAGER

We're Midland Poultry Holdings Limited, one of the larger poultry rearing and processing companies in the U.K. and part of the Unilever Concern. Our headquarters is located in the centre of Shropshire — some of the finest country you'll ever find — but our operations are far from rustic, in fact we're implementing distributed computing, on-line programming and other concepts that others are still talking about.

Now, to help us carry on, we're looking for a man or woman who will join our small, established and enthusiastic team as Computer Systems Manager.

He/she will be responsible to the Computer Services Manager for systems analysis work and associated programming and will have total involvement in computing from our hardware to the interface with all our management team. Currently we are using a PDP 11 processor linked into an IBM mainframe, but our plans involve upgrading our processors to support over 20 users.

Applicants for this post must therefore be experienced in IBM mainframe or mini computer programming and possess a sound knowledge of a high level programming language. But not just that — they should be able to carry a project through to conclusion and be keen and ambitious — the sort that will be looking forward to significant promotion with us, or within the Unilever Concern, in a couple of years.

On salary we are talking around £8,500 p.a. plus pension scheme incorporating first year life assurance, B.U.P.A. and of course assistance with removal expenses. We may even be able to help with short-term housing while you look around.

If you like the sound of us and are ready for the next step in your career send details of yourself to me, quoting reference to:

John T. Buick, Group Personnel Manager
MIDLAND POULTRY HOLDINGS LTD
The Grove, Craven Arms, Salop SY7 8BB

COMPUTER ENGINEERS U.K. - O.S.

FIELD/SITE/SUPPORT/MANAGEMENT
STAND BY
SYSTEMS
MANAGEMENT
MAN ON CALL/ON-DEUTY
RECRUITMENT CONSULTANTS/HODKINSON (08824) 63731

Puzzle Answer

GET INTO BED WITH OUR MICROS . . .

Embedded microprocessors are putting processing power out where it belongs . . . bang in the middle of the applications sub-systems of our advanced telecommunications equipments.

If you are already accustomed to mix it with both hardware and software, equally at home with logic design and programming, maybe you'd like to see one of our real-time subsystems right through design and development. If you are experienced in hardware, software, or firmware design, and you want to stretch your expertise, we will train you in the other disciplines.

Your prospects for career development are limitless, and the starting salary will reflect not only your experience to date, but also the value we place on our technicians.

Should you have to re-locate near to London, we offer a **very generous package**, and one that first time buyers will find of special interest. There are of course all the other fringe benefits, and security, that comes for working within a leading company in its field.

**INTERESTED? THEN GIVE US A CALL —
OUR MICROS ARE WAITING**

BILL BYRNE — 01-629 7262

(Reverse charges)

Computer Appointments

a division of Graduate Appointments Ltd. 7 Princes Street, London W1R 7RB Tel: 01-629 7262

Appl 1/4/79 1:50